AAS African and African-American Studies
ACC Accounting
AH Art History
AME Audio and Music Engineering
AMS American Studies
ANT Anthropology
ARA Arabic
ASL American Sign Language
AST Astronomy
ATH Archeology, Technology, and Historical Structures
BCD Biological Sciences: Cell and Developmental Biology
BCH Biological Sciences: Biochemistry
BCS Brain and Cognitive Sciences
BEB Biological Sciences: Ecology and Evolutionary Biology
BET Bioethics
BIO Biology
BMB Biological Sciences: Microbiology
BME Biomedical Engineering
BMG Biological Sciences: Molecular Genetics
BSB Business
CAS Arts and Sciences, the College
CGR Classic Greek
CHE Chemical Engineering
CHI Chinese
CHM Chemistry
CIS Computers and Information Systems
CLA Classical Studies
CLT Comparative Literature
CSC Computer Science
CSP Clinical and Social Sciences in Psychology
CVS Center for Visual Science
DAN Dance
DH Digital Humanities
DMS Digital Media Studies
DSC Data Science and Computation
EAS Engineering and Applied Sciences
ECE Electrical and Computer Engineering
ECO Economics
EBS Economics and Business Strategies
ED Education
EDU Education
EE Electrical Engineering
EES Earth and Environmental Sciences
ENG English
EPD Epidemiology
FEC Financial Economics
FIN Finance
FR French
FMS Film and Media Studies
GBA General Business Administration
GER German
HBS Health, Behavior, and Society
HEB Hebrew
HIS History
HLP Health Policy
HLS Health and Society
IPA Interdepartmental, Arts and Sciences
IR International Relations
IT Italian
JPN Japanese
JST Judaic Studies
KOR Korean
LAT Latin
LAW Business Law
LIN Linguistics
LTS Literary Translation Studies
MBI Microbiology & Immunology
ME Mechanical Engineering
MKT Marketing
MSC Materials Science
MTH Mathematics
MUR Music
NAV Naval Science
NSC Neuroscience
NUR Nursing
OMG Operations Management
OPE Optical Engineering
OPT Optics
PAS Physics and Astronomy
PEC W. Allen Wallis Institute of Political Economy
PH Public Health
PHL Philosophy
PHY Physics
POL Polish
POR Portuguese
PPC Photographic Preservation and Collections Management
PSC Political Science
PSY Psychology
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AAS 100  AFRO FUTURE FEMALES

AAS 103  GATEWAY: APARTHEID S AFRICA

AAS 104  CONTEMPORARY ISSUES & ANTHROPOLOGY
This course explores the complex inter-relation of race, class and gender in contemporary America, both in people's subjective identities in their objective life chances. The materials assigned include first-person narratives of particular life experiences; quantitative analyses of general statistical patterns; and long-term historical explanations of these experiences and patterns.
Offered: Spring

AAS 106  COLONIAL & CONTEMPORARY AFRICA
This course uses film, literature, and historical studies to understand the transformation of African societies during the colonial era and its neocolonial aftermath. It maps out the forging of new national identities, creation of wage laborers, restructuring of rural communities, and changing power relations between women and men, the young and old. Students will also explore how African men and women, from their homes and workplaces, and as part of nationalist and national liberation movements during and after the Cold War, have sought to redefine their place in the global economy amidst new opportunities and challenges presented by environmental degradation, the HIV/AIDS pandemic, hunger, international debt, and China's growing thirst for the continents seemingly inexhaustible natural resources.
Offered: Fall

AAS 107  HISTORY OF ISLAM
The development of Islam from its origins in the Qur'an and Muhammad's teachings, through the codification of the classical tradition in its various forms, and finally to the living Islam of the contemporary world.
Offered: Fall

AAS 121  WORLD MUSICS
Engaging an extraordinary diversity of sound, this course explores some of the world's major traditions of musical performance, including classical, ritual, and ceremonial music from around the globe. Through weekly reading and listening assignments, we will study musical sound structures within a variety of social, political, and religious contexts, investigating relationships between music, people, and place. In addition to well-known modes of music making, we will look at many fascinating but less familiar forms of musical expression, such as aboriginal pop music from Australia, the throat-singing traditions of Tuva and Mongolia, and the freedom songs of South Africa. The course will culminate in a semester-long final project.
Offered: Fall

AAS 122  HISTORY OF JAZZ
This study of Jazz, an American musical art form, will be structured around the lives and music of jazz musicians, across a range of instrumental, vocal, and ensemble genres. Course focuses on jazz titans, those individual and musical groups distinguished by their seminal and permanent influences, such as Louis Armstrong, Miles Davis, or Coleman Hawkins or shorter intense careers, such as Charlie Parker. Blues, ragtime, swing, bebop, cool, progressive, and free jazz are landmark terms. And finally, study of the musical history will be enhanced by considerations from sociological, linguistic, and philosophical perspectives. The instructional format includes lectures, discussion and intense emphasis on listening. This course is designed for students with little or no musical training; simple technical, musical vocabulary and concepts will be provided. Reading, listening assignments, brief written assignments and two exams. No prerequisites. (Fall Only)
Offered: Fall

AAS 122B  HISTORY OF JAZZ II

AAS 141  AFRICAN-AMER HIST I TO 1900
After examining the primary features of pre-European African society we will assess the disruptions triggered by European arrival. A discussion of the "Middle Passage" -- the transportation of enslaved Africans to North America -- and the Africans' adjustment to their new environment will compose the first section of the course. We will then focus on the process of "Americanization" as the Africans became African-Americans. The struggle for freedom and citizenship will conclude our survey. The course readings will be selected from autobiographies by African and African-American authors, and some brief
selections from secondary texts. Using the autobiographies as historical source material, we will examine the values and cultural practices of Africans in America, and the ways in which African-Americans adapted to and shaped American life and culture.
Offered: Fall Spring

**AAS 151 THE BLUES**
The course covers the history and influence of the music called "the Blues"; the origins of blues in the context of African American culture in the late 19th and early 20th centuries, the blues' rapid rise to becoming the dominant popular music in the African American community, and the discovery of blues by white audiences. Class format combines lecture, listening and discussion.
Offered: Fall Spring

**AAS 156 INTRODUCTION TO AFRICAN-AMERICAN LITERATURE**
This course surveys African-American literature of a variety of genres-poetry, drama, autobiography, fiction, and non-fiction essays-from the 18th Century to the 20th. The course interprets this tradition not only as the production of American writers of African descent, but also as a set works that display formal characteristics associated with black cultural traditions. Discussion topics include the meanings of race, the construction of black identity, and intra-racial differences of class, gender, and sexuality. Special attention will be paid to approaching literary texts from a variety of critical perspectives.
Offered: Fall

**AAS 157 AFRICAN RELIGIONS OF THE DIASPORA**
A study of the Interfaith Movement from the late 19th to the early 21st century, including issues of identity, religious conflict, and women's voices.

**AAS 158 GOSPEL CHOIR**
One rehearsal per week. Two concerts per semester. In addition, there may be off-campus performances in local colleges, churches, and other venues in the greater-Rochester community. The Gospel Choir performs a varied repertoire of sacred music -- spirituals, hymns, traditional and contemporary Gospel, music of the praise-and-worship genre. Students may register for credit or simply sing as choir participants. (Fall and Spring) (1 credit)
Offered: Fall Spring

**AAS 162 MODERN AFRICAN-AMERICAN ENG**

**AAS 165 INTERMEDIATE MBIRA ENSEMBLE**

**AAS 168 WEST AFRICAN DRUMMING BEG**
In this course, students will work on expanding their repertory of rhythms from Guinea, West Africa, and on improving their playing technique on the djembe, dunun, sangban, and kenkeni. In particular, we will concentrate on learning extended solo sequences for the djembe, and more advanced arrangements played on the dunun, sangban, and kenkeni. Students will also work on developing skills specific to performance, adding choreographed onstage movement to complement their drumming. Pre-requisite: At least one semester of previous enrollment in the Intro West African Percussion Ensemble.
Offered: Fall Spring

**AAS 170 RELIGION & HIP HOP CULTURE**

**AAS 182 WEST AFRICAN DANCE FORMS 1A**
A continuation of Dance 181 that allows the student to deepen their experience and hone their skills in West African Dance.
Offered: Spring

**AAS 185 AFRICAN AMER RELIGIOUS HIST**

**AAS 194 ROCHESTER POLITICS & PLACES**
AAS 202 NEW PERSPECTIVES GLOBAL HIST
The concept of a Third World. The origins of colonialism and "underdevelopment" in the rise of European capitalism. The struggles of the colonial and postcolonial peoples for political independence, cultural autonomy, and economic development.
Offered: Spring

AAS 203 GIFTING, VIOLN & INDEBTED BOD

AAS 210 NGOMA: DRUM-DANCE & RIT S AFR
American Culture? Is there such a thing? This class will explore, discuss and debate this question and some more: If there is an American culture, how can we tackle it? How does anthropology, famous for its research away from home, help us understand current major debates in the United States? How do outsiders understand and evaluate American culture? Is there a return of religion to American public life? How do Americans address power relations, class, gender, ethnicity and race? To tackle these questions we will use assigned readings, films, and current events seen through print and electronic media.
Offered: Fall

AAS 220 RACE & GENDER IN POPULAR FILM
This course explores Hollywood's current fascination with race and gender as social issues and spectacles. In particular, we will focus on the ways that social difference have become the sites of increasingly conflicted narrative and visual interactions in our films. To examine competing representations of racial difference and sexual difference in contemporary US culture, we analyze popular films of the 1980s and 1990s, from thrillers to action films to comedies.

AAS 222 MUS ETHNOGRAPHY & HIV

AAS 226 BLACK PARIS
This course is a study of Black Paris, as imagined by three generations of Black cultural producers from the United States, the Caribbean and Africa. Paris is as a space of freedom and artistic glory that African American writers, soldiers and artists were denied back home. For colonized Africans, and Caribbeans, Paris was the birthplace of the Negritude, the ultimate cultural renaissance influenced by the Harlem Renaissance. From Josephine Baker, Richard Wright, James Baldwin to Shay Youngblood's Black girl in Paris, from Aime Cesaire to Maryse Conde, from Bernard Dadie's An African in Paris and to contemporary Franco-African writing, we will investigate how the representation of Paris functions in the construction of black identities. Readings include: Black Girl in Paris (Shay Youngblood), Desirada (Maryse Conde), The Josephine Baker Story. Paris Noir: African Americans in the City of Light (Tyler Stovall), An African in Paris.(Bernard Dadie).
Offered: Spring

AAS 228 THE POLITICS OF SPORT

AAS 229 Pause: THE POLITICS OF RACE, GENDER, AND SEXUALITY IN HIP HOP
This course examines the complex and dynamic relationship between race, gender, and sexuality in hip hop. The goals: 1) To introduce students to emergent scholarship in the interrelated fields of critical race theory, feminist and gender studies, and queer theory; and 2) To not only use these theoretical rubrics to analyze hip hop, but to also use hip hop as a heterogeneous and constantly shifting cultural and political formation that informs, complicates, and offers new of imaginings of these fields of study. We will look at hip hop figures like Jay Z and Nicki Minaj, subgenres like “sissy bounce” and “gangsta rap,” activist ideologies like “hip hop feminism,” and socio-political issues like mass incarceration and HIV/AIDS in Black communities in order to trace how the historical and contemporary social organizations of sexuality, gender, and race are mutually negotiated, contested, and constructed within hip hop music, film, dance, dress, and other sites of cultural performance.
Offered: Spring

AAS 230 SLAVE NARRATIVES & NEO SLAVE NARRATIVES
Autobiography is the foundational genre in the tradition of African-American literature. It is also the genre that both illustrates and represents the process of the construction of identity. Autobiography is not only writing about a life authored by oneself, but also the life of the self made manifest in the form of writing. This course surveys the tradition of autobiographical writings by African Americans, from slave narratives to recent bestsellers, in order to promote an understanding of autobiography as a narrative form shaped by its historical context and the purposes of the author. In addition, the course provides students with insights into various topics in African-American culture and history. Readings include texts by Maya Angelou, Frederick

Offered: Spring

**AAS 231 AFRICAN-AMERICAN DRAMA**

Study of dramatic works by African-American playwrights during the twentieth and twenty-first century.

**AAS 232 WAR, GENOCIDE & JUSTICE**

**AAS 233 (IL)LEGAL ANTHROPOLOGY**

**AAS 235 ETHNIC POLITICS**

**AAS 237 REPRESENTING AFR-AMERICANS**

**AAS 239 SPIRITUALISM IN AMERICA**

The primary aim of this course is to explore the historical development and structural make-up of modern American Spiritualism. This course offers students a historical narrative that ranges from the early development of modern Spiritualism in upstate New York to current forms, such as African American Spiritual churches of New Orleans. In addition to this historical survey, the course examines major principles making up the framework of modern Spiritualism in America. Class format includes lectures, discussions, films, and field trips.

Offered: Fall

**AAS 240 CORRUPTION GLOBAL ECONOMY**

**AAS 241 MAJOR AUTHOR: TONI MORRISON**

Toni Morrison has emerged as one of the most influential writers and critics in contemporary American culture. This course will approach her work from a broad range of critical perspectives including black feminist thought, psychoanalysis, trauma theory, Biblical exegesis, postcolonial analysis, and critical race theory. Although this class will emphasize rigorous study of her literary work, we will also pay close attention to her contributions to literary criticism, her role in public life as well as her forays into political and national debates. In our study of her novels, we will explore such issues as the importance of history and myth in the creation of personal identity, constructions of race and gender, the dynamic nature of love, the role of the community in social life, and the pressures related to the development of adolescent girls.

Offered: Fall Spring

**AAS 242 URBAN CHANGE&URBAN POLITICS**

**AAS 242W URBAN CHANGE&URBAN POLITICS**

**AAS 243W MUHAMMAD & THE QUR’AN**

This course is a study of the prophet Muhammad, the Qur’an, and their importance to medieval and modern Muslim culture. The prophet’s life and major themes of the Qur’an are discussed together with interpretations of them found in Islamic legal, theological, philosophical, and mystical writings.

**AAS 246 CRY FREEDOM**

Since the 1960’s certain Christian theologians have attempted to re-think and re-express their religious beliefs in ways that can lead to the radical transformation of people's lives and social institutions. The movement this group of diverse Christian thinkers has set in motion is often referred to as liberation theology. In this course we will look at the principal ideas of various liberation theologians -- Latin American, Asian, African, Afro-American, and feminist. As well as looking at the ideas of these thinkers, we will also examine the social worlds in which they think and write, thus trying to see the connection between their ideas and the social environments they want to liberate.

Offered: Spring
AAS 247 BLACK PARIS

AAS 249 THE CIVIL WAR
The course suggests that there existed two distinct views as to how the new nation would be structured. Once these views clashed and became sectional, the nation was thrown into a political, theological, and, ultimately, a military contest the demands of which led to the incorporation of structural changes that had the effect of resolving the very issues that had propelled the nation into war. As we identify and discuss the causes, conduct, and consequences of the Civil War, we will examine the changing ideas about nation, government, work, race, and gender, and ask: How different were Northern and Southern institutions and, to what extent were northern and southern Americans fundamentally different people?
Offered: Fall Spring

AAS 250 RACE IN AMERICAN FICTION
This course provides a basic introduction to some of the major works and themes in American literature, focusing primarily on the development of the novel and short story, with limited attention to poetry and drama. We will begin in the nineteenth century and work our way through such contemporary writers as Toni Morrison and Tony Kushner. Our focus will be on the creation of a national identity and how issues of race, gender, class, and sexuality intersect in the formation of an American literary tradition. Students will trace a number of important themes such as the relationship between politics and art, the impact of slavery and the Civil War, immigration, the American dream and the development of a national mythology and ideology. In our study of various movements in the American literary tradition, we will also pay close attention to the intellectual debates concerning audience, language, and the purpose of art that have shaped key texts and historical time periods.
Offered: Fall Spring

AAS 251 AFRICAN DIASPORA IN LAT AMER
This course introduces students to the emergent field of U.S. Latino/Latina writing and culture. Does the rich diversity of Latino communities in the United States—stretching from Los Angeles and the southwest to Miami and New York via Texas, Chicago, Minneapolis, and all stops in-between—frustrate or cancel any attempt to group their experiences under a single ethnic-racial term like “Latino/a”? What exactly is “the browning of the Midwest”? To what kind of gender, sexual, and racial codes are the inhabitants of these communities subjected? How do Latino/a narratives map the conflicted terrains of “utopias without borders,” free-trade zones, diasporas, nomadic workforces, and even the Internet? Latinos, Latin Americans, immigrants, exiles, refugees, border peoples, rafters—it is increasingly as difficult to define the legal status of individuals and communities as it is to talk about social, economic, and cultural identities.

AAS 252 ECONOMIES & SOCIETIES IN LATIN AMERICA
Provides an historical explanation for the general problem of material poverty and the attendant sociopolitical crises that characterize contemporary Latin America and the Caribbean.
Offered: Fall

AAS 253 ECONOMICS & SOCIAL CONDITIONS OF AFRICAN-AMERICANS
Economic development of African Americans during the twentieth century, with an examination of the economics of discrimination. Same as HIS 253 and AAS 253.
Offered: Fall

AAS 254 WEST AFRICAN DANCE FORMS I
Students will experience dancing African styles from the traditional cultures of Ghana and Guinea, West Africa. Technical emphasis will focus on foot patterns and placement, as well as developing the proper physical stance for African dance styles. Students will practice the dances and drum songs called Kpanlogo & Gota from Ghana, and Yankadi, Makru, & Kuku from Guinea, as well as various other selections. Outside work is required, including performance attendance, video viewing, article analysis, and journaling. Students can expect to gain a broadened perspective on contemporary West Africa and its cultural practices.
Offered: Fall Spring

AAS 256 HISTORY OF RACE IN AMERICA
AAS 260 NIGERIA SINCE ISLAM REV 1804
In the context of the global economy, Nigeria, the most populous country in Africa, is blessed with vast mineral resources and agricultural lands able to produce a wide variety of tropical products and foods. The country's large population is made up of talented and highly resourceful individuals, who are quick to respond to economic incentives. Thus, it is hard to understand why the country has one of the lowest per capita incomes in the world and why the country's economy occupies such a lowly position within the global economy. We focus on the historical development of socio-economic/political structures over time to explain why the giant of Africa continues to slumber. Some of the country's central problems, such as ethnic and religious contradictions, are similar in some way to those in the U.S. The solutions attempted by the governments of both countries, such as affirmative action, are also somewhat similar. We will conduct a comparative analysis of contemporary historical issues in the two countries.
Offered: Spring

AAS 262 AFRICAN-AMERICAN ART

AAS 265 History of the African Diaspora in Latin America
This course examines the historical experiences of Africans and their descendants in Latin America and the Caribbean. The guiding questions of this course are: What is the African diaspora? What is the utility of such a framework for writing the histories of African descended peoples living in Latin America? What do the experiences of Afro-Latin Americans living in the region reveal about the grand narrative of Latin American history? While the course will begin with the era of colonial slavery, most of our attention will focus on the histories of Afro-Latin Americans after emancipation. Topic we will explore include: the particularities of slavery and emancipation in the Americas, gender and the formation of African-descended communities, the role of race and Afro-Latin American peoples in processes of nation formation, and the transnational dimensions of African diaspora history. (cross listed with HIS 248)
Offered: Spring

AAS 267 FRENCH IN FILM

AAS 270 PROGRESS AMER

AAS 271 CONTMPRY AFRICAN POLITICS

AAS 278 BIRTH & DEATH II: MAKING POPULATIONS HEALTHY
This course examines programs carried out by governments, multilateral organizations, and non governmental organizations to deal with "public problems" connected to population: communicable diseases such as TB, malaria and HIV/AIDS; famine prevention and relief; child survival, especially malnutrition and infant diarrheal disease; safe motherhood; teen pregnancy; contraception, and abortion.
Offered: Spring

AAS 280 GUINEA'S CULTURAL REVOLUTION

AAS 281 STATE ROLE GLOBAL PERSP

AAS 288 HISTORY OF THE AMERICAN SOUTH: 1896-1945
Blue States! Red States! Why so many "Red States" in the South? Why such close attachment to family, religion, and community? Why such a penchant for a distinct music, food, and sports culture? Why has the region been for so long associated with social backwardness—violence, racism, and political conservatism? These and other characteristics (real or imagined) have roots that extend back to Europe and Africa while many are the result of more recent events dating back only a few generations. This course will address these and other questions in the search of historical answers to the roots of southern peculiarities and the origins of those "Red States."
Offered: Spring

AAS 291 CARIBBEAN NOVEL & THEORY
This course is a study of major Caribbean novels and major theoretical texts. The reading will be structured around the notion of "Antillanite" or Creolization elaborated by Martinican Edouard Glissant and his heirs Chamoiseau and Confiant of the "Creolite" movement. The controversial presence of the Other (Africa and France) in the Caribbean, the need to build a
Caribbean authenticity in order to participate freely in what Glissant terms "Relation planétaires" (Planetary Relations) will also be thoroughly examined.

**AAS 310** **AFRCN-AMER LIT & THE ARCHIVE**

**AAS 356** **BLACK FAMILY IN SLAVERY & FREEDOM**

After a discussion of the Moynihan Report controversy and an assessment of the literature on the black family, the readings will investigate why and how stable black families were encouraged, and how they developed under slavery. The impact of factors such as economics, politics, religion, gender, medicine, and the proximity of free families, on the structure of the black family will be given special attention. In this way, the structure of the slave family on the eve of Emancipation, and its preparedness for freedom, will be tested and assessed. Students will be encouraged to identify persistent links between the "history" of slavery and the black family, and the development of social policy.

Offered: Spring

**AAS 380** **SENIOR SEMINAR**

Students will draw upon their exposure to the theory methods of AAS to produce an interdisciplinary research paper on a topic of their own choosing. Open only to senior majors. Permission of Department required.

Offered: Fall Spring

**AAS 382** **SLAVERY & 20THC AFRCN-AM NOVEL**

**AAS 390** **SUPERVISED TEACHING**

**AAS 391** **INDEPENDENT STUDY**

Independent studies on some aspect of the problems of energy resource development in lower-income countries, solutions to it, and relationship to development issues, including work with the instructor’s Access to Hydrocarbon Energy for African Development project, can be done within this course.

**AAS 393** **SENIOR PROJECT**

May be an independent course with a faculty sponsor or may be taken in an advanced research seminar in which the student elects to write the essay but not to do all the required readings; as such it does not meet the 300-level seminar requirement, but it may be used as a distribution requirement within the area.

**AAS 394** **INTERNSHIP**

Experience in an applied setting supervised on site. Approved and overseen by a University instructor.

**AAS 396** **SENIOR THESIS**

**AAS 429** **NARRATIVES OF SLAVERY**

**AAS 430** **AFRICAN-AMERICAN AUTOBIOGRAPHY**

**AAS 435** **ETHNIC POLITICS**

**AAS 443** **MAJOR AUTHORS: TONI MORRISON**

**AAS 449** **THE CIVIL WAR**

**AAS 450** **RACE IN AMERICAN FICTION**

**AAS 456** **HISTORY OF RACE IN AMERICA**

**AAS 462** **AFRICA DIASPORA IN LATIN**
AAS 986V FULL TIME VISITING STUDENT

AAS 997 DOCTORAL DISSERTATION

AH 100 INTRODUCTION TO VISUAL & CULTURAL STUDIES
The aim of this course is two-fold: First, to develop an understanding of the extraordinary variety of ways meaning is produced in visual culture; secondly, to enable students to analyze and describe the social, political and cultural effects of these meanings. By studying examples drawn from contemporary art, film, television, digital culture, and advertising we will learn techniques of analysis developed in response to specific media and also how to cross-pollinate techniques of analysis in order to gain greater understanding of the complexity of our visual world. Grades are based on response papers, class attendance and participation, and a midterm and a final paper. Occasional film screenings will be scheduled as necessary in the course of the semester.
Offered: Spring

AH 101 INTRO TO ART & VISUAL CULTURE
This course is designed to introduce the student to aspects of the history of Western painting, sculpture, & architecture from the Renaissance through the present. We will examine the various schools & movements in their historical contexts, while paying particular attention to the histories that bear upon them, such as the influence of the classical past, religion, gender, political power, & the rise of the artist. The course will therefore attempt two goals; one, to familiarize students with the principal monuments of the western tradition from about 1400 onward, that is, the paintings, sculptures, buildings, & artifacts which form the substance of this narrative; two, to develop visual literacy, that is, the ability not only to identify but also to discuss art works in a way that develops critical competence & an understanding of how the western tradition of art has come about.

AH 102 INTRO TO MEDIA STUDIES
This course introduces students to the theory and practice of media studies. We will look at a range of both media and historical tendencies related to the media, including manuscript culture, print, and the rise of the newspaper, novel, and modern nation-state; photography, film, television and their respective differences as visual mediums; important shifts in attitudes towards painting; the place of sound in the media of modernity; and the computerization of culture brought about by the computer, social networks, video games, and cell phones. In looking at these, we will consider both the approaches that key scholars in the field of media studies use, and the concepts that are central to the field itself (media/medium; medium-specificity; remediation; the culture industry; reification and utopia; cultural politics). By the end of the class, students will have developed a toolkit for understanding, analyzing, and judging the media that shape their lives in late modernity.

AH 103 WAYS OF SEEING:
Ways of Seeing is an introductory course in Visual Studies and Art History. We look at images and objects and learn “ways of seeing”: in other words, how these artifacts visually relate to history, to their producers, and to the people who look at and live with them. Considering issues like gender, class, sexual identity and race and ethnicity, we develop visual skills by looking at a wide range of images, reading histories and analyses, and holding wide-ranging class discussions. This course, which changes “topic” very frequently, is an excellent introduction to art history.

AH 104 EUROPEAN AVANT-GARDE CINEMA
In the 1910s cinema was just an entertainment industry, but it wasn't until the 1920s that it became an artistic medium. This course explores the European Avant-garde film production as a direct response to the accelerated modern life at the beginning of the century. By looking at Surrealism, Dadaism and the French Impressionists we will focus on specific questions such as the relationship between men and the machine with the ‘ballet mechaniques’ or the city symphonies. We will look at filmmakers such as Marcel Duchamp, Jean Cocteau, Man Ray, Vikking Eggeling, Fernand Léger, Alberto Cavacanti, Walter Benjamin Ruttman, Dziga Vertov, Luis Buñuel, Salvador Dalí, Hans Ritcher, Oskar Fischinger, Marcel L’Herbier or Jean Epstein.

AH 106 INTRODUCTION TO ARCHAEOLOGY
This course introduces the student to the field of archaeology through three units of study: 1) The history of excavation from ancient to modern times, 2) The techniques of excavation and the analysis of material remains, 3) Modern theories of cultural interpretation of archaeological sites. We will discuss the value of archaeological approaches to the fields of anthropology, history, architectural and art history, religious and classical studies. Much of the instruction will be illustrated by case studies of sites; although the view will be global, there will be a concentration in Old World material from prehistory to the early modern period. Students will be required to write three essays, with subjects selected from each of the three course units.
**AH 108** ENGIn & ARCHITECT HERITAGE

**AH 110** JUSTICE AND EQUALITY

**AH 112** MID EASTRn WOMEN IN COMICS

**AH 114** CREATING ARCHITECTURE - an Introduction

Buildings are among the most public, visible & long lived artifacts that a culture creates. The built environment serves as both a repository of cultural information & exerts an influence that extends beyond the society that created it. This introductory course will explore a visual survey of Architecture from Ancient Times to the present day using a slide lecture & discussion format that will invite each student to participate in the discourse of the class. The studio portion of this course will provide students an opportunity to create their own structures from sketch to 3 dimensional pieces exploring basic design elements & materials. No prior studio experience is necessary. Students will be expected to purchase basic tools used in this course. A materials supply list will be provided at the first class. Students are expected to pay the $50 studio fee to cover the use of shared supplies & equipment. Not open to seniors. To be added to the wait list, please contact stephanie.ashenfelder@rochester.edu.

**AH 120** INTRO DIGITAL MEDIA STUDIES

This course will serve as a hands-on introduction to the study of digital media. Through a mix of critical and theoretical readings we will historicize the concepts of both “new” and “media” and look at their applications in the Humanities and Social Sciences. Paying particular attention to ideas of practice and networking—through a combination of individual and collaborative projects—we will explore the meaning of authorship in the digital age. This class will have a required lab that will meet in Rettner Hall at a time to be determined.

**AH 124** ART MATTERS: European Art Since 1945

In the early 1960s, European artists undertook seemingly outrageous stunts: in France, Yves Klein patented a particular shade of blue, which featured on the hundreds of balloons he released into the Parisian sky and the brightly colored cocktails he served at his opening; in Italy, Piero Manzoni produced rarefied works containing his breath or his excrement; in Germany, Joseph Beuys covered himself in gold and honey, carried a dead rabbit around a gallery, and claimed to explain art to it! In this class, we will consider such works within a broad survey of European art in a global context, from the abstract expressionist painting of the 1950s to developments through the early 1970s, including Situationism, Arte Povera, Capitalist Realism, kinetic and computer art, as well as Gutai in Japan and Neo-Concretism in Latin America. We will examine radical new forms of art-making along with negotiations of traditional mediums, asking how they mattered, i.e., how they were made and what they meant.

**AH 128** MODERN ART

This course introduces students to art made from the late 19th century to the present day. Broad coverage of a long time span will be supplemented with a consideration of selected “key” works to familiarize students with points of reference and to introduce concepts. Readings will introduce ideas from contemporary theory. Issues of gender, the effects on art of technology, and the way in which institutions have influenced the production and reception of modern art will be considered. The course will be taught by a combination of lecture and discussion.

**AH 130** HISTORY OF PHOTOGRAPHY

This survey course will provide an overview of photography from pre-photographic times to the present. Given that there is no single history, but only histories of the medium, the course will explore a variety of approaches to the study of photography, its evolution in relation to other art forms and its role in the development of mass culture. Students taking this course will gain a basic knowledge of photographic history, its major events, practitioners and theorists. We will consider the photographic image in a range of contexts, including art, advertising, journalism and propaganda, and will explore the social, political and ethical consequences of photographic media in our culture. This course will make extensive use of the collections of the International Museum of Film and Photography at the George Eastman House.

Offered: Spring

**AH 136** INTRODUCTION TO THE ART OF FILM

The primary visual, aural, and narrative structures and conventions by which motion pictures create and comment upon significant human experience.
AH 137 INTRODUCTION TO MODERN ARCHITECTURE
This course will examine the origins and development of modern architecture from the Enlightenment through the present. Lectures are organized thematically with sub thematic reference to chronology. Although many canonical works will be considered, the primarily thematic organization of this course is meant to underscore that the history of architecture in the modern era might not operate as a heroic succession of cultural, formal and stylistic transformations as Banister Fletcher famously suggested in his A History of Architecture on the Comparative Method (1896). Rather, this course will emphasize the situation of modern architecture at the nexus of myriad social, political, economic and cultural events since the Enlightenment.

AH 169 MATERIAL LIFE OF RELIGION

AH 172 CONCEPTS/INTRO 2D: BAUHAUS

AH 188 CITIES & ARCH IN PRE-COL

AH 199 THE ANCIENT CITY

AH 201 ARCH OF PERU

AH 202 CHINESE FILM

AH 203 DIGITAL CITYSCAPES

AH 206 AMERICAN INDEPENDENT CINEMA
Independent film occupies a central place in our cultural consciousness. Its success speaks to the value America places on the ‘outsider.’ From the pop-violence of Quentin Tarantino, to the introspective cinema of Mark Rappaport, what does it mean to be ‘independent’? After all, films we consider to be ‘independent’ often have more connections to Hollywood than we tend to think. But how do we begin to approach this term? For instance, is it a question of funding? Does it indicate certain conditions of authorship or production? Can we think of ‘independent cinema’ as a genre unto itself? We will consider such questions by examining a number of important works from the past 20 years by filmmakers such as Kelly Reichardt, Todd Haynes, Andrew Bujalski, Harmony Korine, Tom DiCillo, Gregg Araki, Jem Cohen, Larry Clarke, Sadie Benning, Azazel Jacobs, Cheryl Dunye, Spike Lee, Jenni Olson, Todd Solondz, Sofia Coppola, Richard Linklater, Jon Jost, Su Friedrich, Jim Jarmusch, Caveh Zahedi, and the Coen Brothers.

AH 207 FILM HISTORY: 1989-PRESENT

AH 209 WRITING ON ART
This course seeks to improve students' writing and analytical skills through analysis and experimentation with different styles of writing about contemporary and historical arts. Students analyze prose by artists, historians, cultural critics, poets, and others who have written on the visual arts, with an eye towards how writing on art can be a tool for improving expression in many areas. Slide lectures, discussions, and writing projects on objects of diverse media and historical eras will be augmented by visiting speakers and field trips to museums and galleries. This course fulfills one-half of the upper level writing requirement for both studio and art history majors. Permission of instructor required.

AH 210 OBJECT LESSONS: ENCOUNTERING THE WORK OF ART
This class will examine 8 works of art from different eras and geographical locations in order to understand the multi-vocal ways that visual objects communicate ideas about culture, religion, philosophy, aesthetics, politics, and a host of other issues. We will focus on how to analyze different kinds of objects—a building, a piece of furniture, a painting, a contemporary installation, among them—in order to see how artists, art historians and critics “read” a work of art in different ways. Some field trips to museums and cultural sites will be part of the class, as will intensive reading and writing about art.

AH 211 FRENCH CINEMA: THE NEW WAVE
This course provides a detailed examination of the French filmmakers of the New Wave, from 1959 to 1967. We will examine the work of Jean-Pierre Melville, Claude Chabrol, Francois Truffaut, Jean-Luc Godard, Eric Rohmer, Agnes Varda, and Jacques
Rivette. We will also explore the films' historical context and influence through some attention to their predecessors and successors. Knowledge of French helpful, but not necessary.

AH 212 WHAT PHOTO IS
What does color do to ideas of photography that were born in the black-and-white era? How does digital manipulation further alter our understanding of the medium? Does the invention of cinema change what photo is? Do social institutions—from charity and social justice to profiling and social networking, all of which owe some of their cultural importance to photography—change what photography is? This course uses readings, lectures, discussions, and visits to the Eastman House and with working photographers to promote deeper understandings of what photography has been and can be, and to enable students to “read” photographs more complexly and historically.

AH 213 RACE & GENDER IN POP FILM
This course explores Hollywood’s current fascination with race and gender as social issues and spectacles. In particular, we will focus on the ways that social difference have become the sites of increasingly conflicted narrative and visual interactions in our films. To examine competing representations of racial difference and sexual difference in contemporary US culture, we analyze popular films of the 1980s and 1990s, from thrillers to action films to comedies.

AH 215 SEMINAR IN CONTEMPORARY ART
The Seminar in Contemporary Art is a course designed to bring together studio art and art history majors and minors in an extended discussion of contemporary artistic practices. We often look backwards to the 1960s or earlier but usually focus on a method, issue, or aspect to contemporary art (e.g. participation; photography; authorship). This course prepares students for critical engagement with contemporary art practices and can serve as an excellent preparation for Art New York or for a career in the arts.

AH 216 ORIENTALISM ART & ARCH
This seminar addresses the construction of knowledge through politics and how this process has colored ideological dispositions and means of representation—specifically literary, artistic and architectural—across time. Orientalism is the seminar’s specific example but also posits parallels and intersections with other discursive settings where cultural representations have been historically constructed by one cultural group of another. This course is organized as a series of encounters between “Western” culture and the “Orient’s” Islamic, South Asian and East Asian cultures in both historical periods—covering antiquity to the present day—and representational contexts, covering literature, art and architecture.

AH 217 TECH OF ART: PICTORIAL SPACE
Visual representation is central to an understanding of both the sciences & the arts. In the sciences photographs, diagrams, graphs & maps form an important, often overlooked, part of their visual culture. In the arts, visual representations are ubiquitous, yet their nature as images is often overlooked in favor of their status as pictures ‘of’ or ‘about’ something. If these representational modes have been formerly regarded as incommensurate, the result of radically different ways of seeing the world, increasingly historians & theorists of both the arts and the sciences acknowledge a commonality of goals between the 2 fields.

AH 218 PHOTO IN EAST ASIA

AH 221 CLSCL ARCHAEOL:ROMN ART&ARCH

AH 222 TRAD JAPANESE CULTURE

AH 224 RUSSIAN ART

AH 225 CLSCL ARCHAEOL:GREEK ART&ARCH

AH 226 (AREZZO) IT MONUMENTS

AH 227 POETICS OF TELEVISION

AH 228 THE ART MARKET
This course asks what happens if you think about art as a commodity rather than in terms of creators, aesthetics, or iconography. Rather than looking at art as self-expression or the work of individual artists, this course looks at art as a commodity and in relation to economic forces. What determines the value of a work of art or an art object and why does value change over time? We will look at case studies providing a historical perspective and at the present-day explosive art market. We will investigate historical evidence on ways in which art was exchanged and evaluated, and how the profession of art dealing evolved. We will look at how dealers became involved in creating brands for artists and ways in which the contemporary art fair has blurred the line between curator and dealer. We will consider how artists work with and against the market and how art and museums figure in economic development. The class will require short writing assignments, a presentation and a research paper.

AH 229 ART IN AGE OF ENLIGHTENMENT
The principal objective of the course is to undertake a reevaluation of the received ideas associated with the eighteenth-century styles known as Rococo and Neo-Classicism. Neither term adequately describes the breadth and complexity of the art produced in the eighteenth century, and neither satisfactorily identifies the complexities and contradictions of the cultural milieu that supported this visual culture. In place of these over-simplified terms, we will consider themes such as the pictorial sublime; the picturesque; the hierarchy of the genres, the role of scientific progress and philosophical debate, art and industry, urbanization; travel and exploration, politics and revolution, and the taste for the antique – in short the influence of the intellectual movement known as the Enlightenment.

AH 230 SOCIAL USES OF MEDIA

AH 233 THE CULTURE OF ZEN

AH 236 HISTORY OF FRENCH CINEMA
This course surveys the history of French cinema from its early experiments through the "Tradition of Quality" to the moment immediately preceding the emergence of the New Wave. We will study films selected from the work of the following directors: Lumier, Melies, Gance, Dulac, Leger, Clair, Vigo, Renoir, Carne, Ophuls, Pagnol, Clement, and Bresson. Readings will include contemporary critical and theoretical discussions, as well as historical analyses.

AH 237 ISLAMIC ARCHITECTURE IN CONTEXT
This course presents a review of key works of Islamic architecture from pre-modern, early modern and modern times. It will also focus on key historiographic trends from the last two centuries, introducing critical issues surrounding orientalism, imperialism, abstraction, ornament, symbolism and expertise. This course does not aim to essentialize Islamic architecture or its temporal or geographic categories. It will rather challenge and think anew the traditions that have formulated this relatively young and, as some have described, “unwieldy” field of art history. Emphasis will be placed on the multicultural and polyvalent traditions of the built environment in the Islamic world. Prior knowledge of Islam or architecture is not necessary, as important concepts and terms will be introduced through readings and discussed in class. The course emphasizes writing, critical thinking, and presentation skills through class discussions and a multi-component digital term project.

AH 239 GOTHIC EUROPE
This course explores the intellectual, social, political, economic and religious aspects of medieval culture of the 12th and 13th centuries through its art and architecture. There will be stylistic and iconographical analysis of the monument as well as a consideration of the materials and techniques of the artists and the structural developments of the architecture. The organization of the lectures will provide the main guideline in course content, but reading assignments and extensive classroom discussion will be equally emphasized, and individual inquiries will be encouraged in the selection of topics.

AH 240 TOP CONT ART & CRIT: WARHOL
As the most famous artist of the second half of the twentieth century, Warhol has been the subject of a growing literature that expands upon art history and criticism to encompass queer theory and cultural studies. But the most important shift in Warhol's reception has been brought about by the restoration and return to circulation of his prolific film output from the years 1963-69. The films will be the main focus of this course, but we will also consider Warhol's early work as a fashion illustrator, his entrepreneurship at the Factory, his voracious collecting, and, of course, his paintings. We will read Warhol's writings, including A a Novel. The Philosophy of Andy Warhol, and Popism; and we will examine new approaches to Warhol and ask how they illuminate not only the art but also such issues as consumption, publicity, visibility, celebrity, sexuality, identity, and selfhood.

AH 241 AESTHETICS
AH 242 HISTORY OF PHOTOGRAPHY: 1839-1915
The French author Roland Barthes described the emergence of photography in the early 19th century as a “truly unprecedented type of consciousness.” This class traces the emergence of this photographic consciousness in the 19th century as it develops within a number of specific arenas of culture & representation, from the medium’s conception in the early 19th century to its modernization in the early 20th century. The class will allow for general discussion of the history of photography with some detailed discussion of particular photographers, images, & texts. The class will look at photography as a cultural phenomenon as much as an art form, critically studying the various discursive arenas that this new medium helped to foster and redefine. We will also ask what makes photographic images so compelling, what we expect to see in them & what, distinguishes in the photographic realm a document from an artwork, & an ephemeral image from a material object.

AH 243 ARCHITECTURE IN THE CLASSICAL WORLD
The architecture of Greece and Rome is fundamental to our understanding of the heritage of the West. We will trace the origin and development of building types in Greece: the temple and its sacred area, buildings of public cultural use such as theaters and the invention of town planning. The development of Roman architecture will also be examined for its sources and meaning, considering local Italic traditions, Etruscan and Greek. In addition to determining the meaning of architectural forms, two major themes will be followed: the spatial aspect of planning and building and the inventiveness of Roman constructional practices. Offered: Spring

AH 244 (AREZZO) ART, ARCHITECTURE
When we look at works of art in museums, galleries, and churches we are, in most cases, looking at them out of context. Furthermore, when we look at early Renaissance paintings we do not see them through the eyes of the people who produced them or for whom they were produced. We have to learn to see them as they might have been seen. We can begin to do this by learning how to read and to interpret the complex elements at play beneath the immediate surface by setting the artist, his work, and his public in their social and religious historical contexts, and by exploring the universal unspoken language of signs and symbols used by artists. The course content is based on painted forms, i.e., panels, canvases, and frescos from the Trecento and Quattrocento with an emphasis on Tuscan painting. The selection, as far as possible, takes advantage of the availability of works in churches, museums, and galleries within easy visiting distance of Arezzo.

AH 245 ARCHITECTURE IN THE HIGH MIDDLE AGES
This course introduces the architecture of Western Europe from the eleventh to the fifteenth century. Building of this era is usually divided into two principal phases, Romanesque and Gothic. While there are numerous regional and chronological variations during these centuries, many instances of exchange across Europe and exotic influences through cross cultural contact, the course stresses the pan-European development of structural and aesthetic inventiveness and the extraordinary relation between form and content in buildings, whether churches, monastic communities, houses or castles. All of the works are examined against the changing values of cultures, which constitute the transformation of the West.

AH 246 REPRESENTING AFR-AMERICANS

AH 247 VISUALIZING DANTE

AH 248 FRENCH PHILOSOPHY SINCE 1960

AH 250 AGE OF BAROQUE
This course will address the painting, sculpture and architecture of seventeenth-century Europe. The art examined will range from Italian ecclesiastical architecture through to the art of Louis XIVs Versailles, Spanish court art and the art of the Dutch Republic. Artists studied will include Poussin, Rembrandt, Bernini, Borromini, Caravaggio, van Dyck, Velasquez, Rubens, and Vermeer. While there is no one methodology that adequately explains this varied and exuberant period, we will focus on the development of a Baroque way of seeing the better to understand the stylistic break between the Renaissance and the Baroque on the one hand, and the Baroque's relationship to the Rococo on the other. The course will be structured around lectures, but every class will include time for a group discussion. Several classes will be held at the Memorial Art Gallery, utilizing MAGs rich holdings of Baroque painting. Readings will be available via the library's web page and linked to weekly discussions.

AH 252 FILM HISTORY: EARLY CINEMA

AH 253 FILM HISTORY: 1929-1959
This course provides a transnational survey of film history, examining the technical and formal aspects of the medium in its production and exhibition. As we explore the development of cinema during this period, we will address a number of aesthetic and technological issues. For example, how did the development of sound technology affect film form? How did it affect cross-cultural cinematic exchange? What is the significance of genre across various film traditions? What did the studio system contribute to Hollywood's success in the international market? How did immigrant and exiled film personnel shape the industries they joined? Weekly screenings and film journals required.

AH 254 FILM HISTORY: 1959-1989
This course will explore developments in world cinema—industrial, social, and political—from 1959 to 1989. It will explore film aesthetics, technologies, and circulation questions, considering questions like the following: What’s new about the French New Wave? What do we mean by Third Cinema? How do different national cinemas influence each other? In what ways have various national cinemas responded critically to Hollywood’s commercial dominance and to its conventions? How do popular and “art” cinemas speak to each other. How does cinema respond to the pressures and provocations of other media at the inception of the digital age? Weekly screenings and film journals required.

AH 255 ARTS IN AMERICAN CULTURE
What did it mean to be American? What did America look like, geographically and in terms of its people? What part did art and photography play in documenting and giving an identity to Americans in the century between 1850 and 1950? Attention will be given to documenting and representing the West, immigration, and the emerging urban environment. Students will work with the collections of George Eastman House and the Memorial Art Gallery. Requirements for the course include a short museum paper, a term paper, with draft, and take-home midterm and final exams.

AH 262 IMPRESSIONISM & POST-IMPRESSIONISM
This course deals with the interconnecting artistic concerns and subjects of artists such as Manet, Monet, Renoir, Pissaro, Morisot, Cassatt, Cezanne, Van Gogh, and Gauguin. It also investigates ways in which paintings and prints made during the later 19th Century in France in their representations of the city, the suburbs, leisure activities, and gender roles participated in communicating a particular worldview. In addition to developing general skills of analysis students should emerge from the course with a strong feeling for the artists as individuals and artistic personalities, an ability to recognize and date: their pictures, to interpret subjects, and an understanding of the way in which institutions operated in a seminal period in modern art.

AH 263 20TH CENTURY ART & CULTURE
This course will explore selected aspects of twentieth-century art, including issues of identity, difference, and the body and ways in which institutions have shaped art. Works in different media will be considered, including examples from George Eastman House. The course will focus on a limited time period or a theme.

AH 264 FILMS OF THE 1930S

AH 265 PHOTO IN SP & SP AMERICA

AH 268 MIDDLE EASTERN CINEMA
This course surveys contemporary Middle Eastern cinema, looking at films from across the region in addition to films about the Middle East. We will watch films that deal with war and conflict, gender and sexuality, modernization and diaspora, keeping in mind current and not-so-current events. We will examine the relationship between film and the development of histories, paying attention to cultural nuance and the idea of geographic genre, while keeping in mind the circulation and distribution of filmic objects. Some films that will be discussed include Persepolis, Waltz with Bashir, Amreeka, Paradise Now. Readings will include work by Edward Said, Hamid Naficy, and theorists of film and visual culture.

AH 269 JAPAN'S FLOATING WORLD

AH 270 CONTEMPORARY CHINESE ART

AH 274 CULTURAL HISTORY OF AMERICAN ARCHITECTURE
Focuses on what the critic Andreas Huyssen calls the perceived "Great Divide" between highbrow and lowbrow forms of culture. Explores the emergence of these divisions and interrogates if and how they have blurred in the recent past.
AH 278 POPULAR FILM GENRES: FILM NOIR

AH 279 CLOCKS AND COMPUTERS

AH 280 NATIVE AMERICAN ART & RELIGION

This class will explore the various spiritual and artistic traditions of the indigenous peoples of North America. Ranging from the Canadian arctic to the desert Southwest, we will look at various practices including: shamanism, art and hunting magic in the Arctic, art and curing societies in the Great Lakes and Eastern Woodlands, evidence for religious practice in archaeological contexts, and Kachina societies in the Pueblo southwest. More in-depth readings will focus on Navajo sand painting and healing, and Plains Indian spiritual traditions including the Sun Dance and Vision Quest, and their manifestations in the artistic record. We shall also examine late 19th century crisis cults such as the Ghost Dance Religion, and pan-Indian movements in the 20th century like the Peyote Religion, as well as issues concerning secrecy, privacy, and ethics in the study of Native artistic and religious traditions.

AH 281 ART & THE CITY: NY IN THE 70's

The recession and fiscal crisis of the 1970s was paradoxically a highly productive period of artistic experimentation in New York City. In the wake of the transforming art movements of the 1960s—Pop, Minimalism, and Conceptual Art—the 1970s saw the invention of new and hybrid media—video art, performance art, and site-specific installation works. As the city’s economy became one based on real estate speculation and financial services, artists moved into the abandoned spaces of nineteenth-century industry. SoHo and Tribeca were remade into living and working spaces for artists, art galleries, and alternative spaces such as 112 Greene Street (now White Columns), the Kitchen Center for Video and Music, and Artists Space. By the end of the decade a new artists’ group that came to be known as the Pictures generation began showing in these alternative spaces. In this seminar we will study how the de-industrialization of New York contributed to new kinds of art making and examine how artists used the city.

AH 285 CHINA'S SILK ROAD

AH 287 CULTURE ON DISPLAY

This course looks at the phenomenon of the museum, asking questions about the relation of culture and institutions. How do museums and the selection of what things go into them and the way objects are arranged and displayed shape the way we think about our past, about art? Why are "natural history" and "history" and "art" displayed in different institutions? What are the implications of reproduction for the "original"? Do museums have a future?

AH 288 PHILOSOPHY OF ART

AH 290 POLISH ART: PAST & PRESENT

The development of Polish art since the 10th c. Special emphasis will be placed on the importance of Poland within Europe, including the formative effects of geopolitics on the development of Polish artistic movements, Polish church art, folk art, poster and architecture. In-depth art history lectures will be conducted both at the University and in museums. The course will be accompanied by a program of field trips. Offered on location in Krakow.

AH 300 ART NY NEW MEDIA CULTURE

Harvestworks will offer this course as an introduction to digital art for Art New York interns. Special application is required. Permission of instructor only.

AH 305K ART NEW YORK COLLOQUIUM

As an integral part of the internship program, all students participating in ANY will meet weekly with the program's resident director. The class will visit museums, art galleries, film & media screenings, & learn from these visits through readings, papers, presentations & discussions. The colloquium will also serve to provide an intellectual framework for understanding the operations of the NY art world & to allow students to discuss with one another their experiences at the various institutions where they intern. Each student will be expected to make a presentation about their internship to the ANY group. There will be an entrepreneurial component which will introduce the students to a wide variety of entrepreneurial activity & innovative practices within arts and culture. Through guest speakers, seminars & field trips the students will learn how entrepreneurial endeavors develop. By the end of the semester, the students will create their own proposal for an entrepreneurial project.
AH 306 THE SUBLIME
The principal objective of the course is to undertake a reevaluation of the received ideas associated with the operation of the sublime in 18th century art, literature and thought. We will consider first the concept in the writings of Edmund Burke and Immanuel Kant, the better to understand the parameters of a notion that shaped not only 18th century aesthetic theory but also provided the conditions for the advent of Romanticism. Following this groundwork we will consider a series of topics, including the paintings of Joseph Wright of Derby, Fuseli’s illustrations to John Milton, the art and poetry of William Blake, the writings of Ralph Waldo Emerson, and the American Sublime. Themes in the course will include the classical sublime, the scientific industrial sublime, the beautiful and the sublime, the picturesque, the natural sublime, the transcendental sublime; and the romantic sublime.

AH 307 RHETORIC OF THE FRAME
The task of any discussion of frames and framing in the visual arts whether in painting, sculpture, film, performance, architecture, graphic novels and cartoon strips, or digital media - is first and foremost to counter the tendency of framing devices to invisibility with respect to the artwork they supposedly contain. We see the work, but we do not see the frame. It is against this tendency to ignore the frame that this seminar is directed. At first glance the frame may seem to be as unproblematic. Starting from a consideration of the foundational texts of frame theory in the philosophy of Immanuel Kant, we will examine the discursive limits of the material and non-material border in the writings of, among others, Mayer Schapiro, Martin Heidegger, Jean-Claude Lebensztejn, Louis Marin, Craig Owens, and Jacques Derrida.

AH 308 MIMESIS: THEORY & PRACTICE
This seminar course will address the issue of imitation and Mimesis through the consideration of key texts from antiquity to the present. Texts will include the foundational philosophies of Plato and Aristotle, the many theorists of literature and art of the sixteen and seventeen-centuries who wrote on imitation, and the reaction against imitation in modern art. Both graduate and undergraduate students will have the opportunity to select a topic related to their own interests and develop it into a research paper, graduate students will in addition present their paper in class.
Offered: Fall

AH 311 DANCE, ART AND FILM
This course explores relations among dance, art, and film at significant moments in the 20th & 21st centuries. We will study instances in which the forms are closely aligned, including the famous productions by artists Gontcharova, Picasso, & Matisse, for Diaghilev’s Ballets Russes; Martha Graham’s partnership with Isamu Noguchi; & Merce Cunningham’s work with Robert Rauschenberg. We will look simply at how dance is filmed or how dance uses film. The course will concentrate on two figures of the postwar American avant-garde: Merce Cunningham & Yvonne Rainer. Cunningham’s dances choreographed for film in collaboration with film & video makers & Rainer’s move from choreography to filmmaking & eventually to hybrids of the two will constitute the core of the course. Other major figures will be explored: choreographers George Balanchine, Doris Humphrey, Trisha Brown, William Forsythe, Anne Teresa De Keersmaeker; & filmmakers Maya Deren, Ed Emshwiller; Babette Mangolte, Dominique Delouche, Thierry de May, etc.

AH 313 ARCHITECTURE, PHOTOGRAPHY, MODERNISM/POSTMODERNISM
The subject of this course is inspired by a series of photographs commissioned from Hiroshi Sugimoto for the Los Angeles Museum of Contemporary Arts’ exhibition At the End of the Century: One Hundred Years of Architecture. Sugimoto’s photographs show canonical works of modern architecture shot out of focus, reduced to both icon and phantom. The seminar considers the changing relations between photography and architecture, between image and space, between picture and object from the advent of modernism to the present. The course looks at these relations in the New Objectivity and the New Vision, Surrealism, the International Style, Mid-Century Modern, and ends by considering the uses of the photography of architecture in Conceptual art and the fascination with modernist architecture in contemporary photographic work. Students read critical studies of modernist architecture and photography and plot the relations between these discourses and practices.

AH 319 MATERIAL CULTURE
This upper-level course interrogates the cultural meaning of things in an increasingly digital age. Paying attention to objects in their native as well as virtual frameworks, we will look at a variety of media (film, photography, fine art, popular culture) in material and on-line contexts to investigate paradigm shifts in 21st century scholarship, archiving, and understanding of material culture.

AH 320 THE POLITICS OF SPACE
In this class we will explore how space is constructed and politicized. From the 19th century flaneur to 21st century cyber communities, from the global economy to domestic interiors, space has been and continues to be ideologically contested terrain. Together we will explore these contests. We will pay close attention to questions of identity formation, particularly as they relate to issues of gender, race and class. In addition, we will investigate the importance of technology in transforming the ways in which we think about space. Permission of instructor only.

**AH 325 AUTHORESHIP: ANXIETY OF INFLUENCE**

Authorship is a key issue in both contemporary art practices and in visual culture, where it is frequently dispersed by social groups, by mediums (including such loosely defined “mediums” as the city or the public), and even theoretical frameworks (e.g. of postnationality, postracial identity, or the problematic of equality). This course lays out the prehistory of contemporary approaches to authorship in critical theory and practice. It is a reading-intensive seminar based on weekly discussions and the development of individual research projects.

**AH 340 THE ART OF INDUSTRY**

Where do technological rationalism and aesthetic beauty converge? The course will address this question through an examination of things and places produced from the advent of the Industrial Revolution to the present, with a specific emphasis on the built environment as well as global contexts of industrial production. Theoretical and primary texts, including works by Marx, Benjamin, Loos, Le Corbusier, Kracauer, Banham and Appadurai, will contextualize a series of thematic concerns including the rise of an industrial vernacular, the “machine aesthetic”, the interrelationship of form and function, international transmutations of technology, Taylorism and Fordism, mass production and the industrial ruin. Subjects considered will include factories and plants, mass housing systems, objects of industrial design as well as artistic representations thereof. The course will be rooted in discussion but may be supplemented by formal presentations as appropriate.

**AH 341 ART OF INFRASTRUCTURE**

This course will examine the aesthetics of several key typologies of human infrastructure in modern times. Most works of civil engineering and other built manifestations of human organization are typically thought of in the contexts of utility, efficiency and functionality and not as veritable objects of beauty born of design philosophy. This broad overview, everything from sidewalks to transport networks, demonstrates that infrastructure has, counter to common believe, very often been at the forefront of aesthetic thought and has played a formative role in rendering human innovation and ingenuity in visual and physical terms. This seminar is organized typologically and will comprise the reading of one recent scholarly book per week from a broad range of disciplines including the history of architecture, the history of science, history, science and technology studies and the history of art. The course material will be augmented by three field trips to important sites in the Rochester area.

**AH 355 FEMINIST FILM THEORY**

Feminism has had a powerful impact on the developing field of film theory from the 1970s to the present. This course will examine the major feminist work on film, moving from the earlier text-based psychoanalytic theories of representation to theories of feminine spectatorship to studies of reception contexts and audience. We will also give attention to the very important role of feminist theory in television studies. Weekly screenings, keyed to the readings, will allow us to test the value of these positions for close critical analysis of the film or television text. Readings to include: Laura Mulvey, Kaja Silverman, Constance Penley, Judith Mayne, Linda Williams, Jacqueline Bobo, Valerie Smith, Lynn Spigel, Lynne Joyrich, Julie D’Acci.

**AH 361 CLASSICAL FILM THEORY**

This course examines the philosophical, aesthetic, and social issues that are central to classical film theory. It traces the historical development of film theory from 1900 to the 1950s. We will begin with on thinkers in the period of early cinema, including Germaine Dulac, Jean and Marie Epstein, and then we will examine the development of film theory in the work of later theorists, such as Jean Mitry, Sergei Eisenstein, Dziga Vertov, Siegfried Kracauer, Walter Benjamin, Andre Bazin and Christian Metz. Weekly screenings of historically contemporary films will allow us to examine the ongoing dialogue between the evolving medium and the developing theoretical discussion.

**AH 385 VISUAL CULTURE OF HERITAGE & IDENTITY**

Cultural critic Stuart Hall has observed “Heritage is a discursive practice. It is one of the ways in which the nation slowly constructs for itself a sort of collective social memory.” In this upper level seminar, we will look at case studies of how people (through the collectivities of gender, ethnicity, race, or nation) construct visual narratives about the past. Among the topics for consideration are Holocaust memorials, Native American and Polynesian museums and cultural centers, African American quilt histories, and even individual artists’ projects of the last few decades (Judy Chicago, Fred Wilson, Silvia Gruner, José Bedia, and...
Jolene Rickard, among others). Readings will be drawn principally from the disciplines of history, anthropology, cultural studies, and art criticism.

**AH 386V VISITING STUDENT IN ART HIST**

**AH 390 SUPERVISED TEACHING**

**AH 391 INDEPENDENT STUDY**

Independent study under faculty guidance of a limited field of art history or individual study on a single topic at an advanced level under the guidance of a member of the art history faculty.

**AH 391W INDEPENDENT STUDY**

Independent study under faculty guidance of a limited field of art history or individual study on a single topic at an advanced level under the guidance of a member of the art history faculty.

**AH 392 PRACTICUM**

Each student will intern in an institution arranged or approved by the Art and Art History faculty. The purpose of this internship is to give students an insiders’ view of the workings of the art world. Students will be expected to document their internship experiences as a means of evaluation at the end of the semester. This program is limited to second, third, fourth and fifth year undergraduate students interested in learning about all aspects of contemporary art, about how art gets made, how it reaches its public, and the processes of its interpretation. Internships will consist of 20 hours per week, for which students will receive eight credits. Permission of instructor required.

**AH 393 ART HISTORY HONORS PROJECT**

See “Requirements for Honors in Art History.”

**AH 394 INTERNSHIPS**

Internships in London and the United States.

**AH 396 MUSEUM INTERNSHIP**

**AH 397 EUROPEAN ARTS INTERNSHIP**

**AH 397F UK ARTS INTERNSHIP**

**AH 398 SENIOR SEMINAR: FRAMING THE SELF IN PHOTOGRAPHY**

While the “selfie” phenomenon continues to thrive in global pop culture, what the term signifies remains unclear. Much as how the uncritical term “picture” is used to describe any photographic image, the neologism “selfie” first denoted self-portraiture of a special kind, but has also come to function as shorthand for any photo-portrait of a living being. Behind such lexical confusion is a larger generative force at work: photography’s pervasive role in framing selfhood, subjectivity, and identity in the modern era. Since its invention, the photographic image has framed and reframed the fluid concept of the self through various artistic, social, technological, and conceptual practices. Engaging philosophy, art history, and photography theory, this course examines how photography has been used to give shape to various philosophies of the self, from the theory of autonomy put forward by Enlightenment philosophers to that of identity embedded within social construction as proposed by numerous critical theorists.

**AH 402 CHINESE FILM**

**AH 403 DIGITAL CITYSCAPES**

**AH 407 FILM HISTORY: 1989-PRESENT**

**AH 410 WOMAN AS TEXT & IMAGE**
Feminist art historians have changed the way we think about images of women, works by women artists, and the very notion of artistic genius. This course will investigate the way in which visual images of women participate with other cultural and social factors in the construction of the idea of woman. It will look at types and conventions in works by male and female artists, as well as in anonymous prints and advertising from different periods, with a concentration on the 19th and 20th centuries. Readings will introduce a variety of approaches.

**AH 411 FRENCH CINEMA: THE NEW WAVE**

This course will explore the American landscape as a cultural artifact with historically specific meanings in particular contexts over time. It will focus heavily on landscape art of the United States, from its English roots, to the Hudson River School and Luminism, to art of the American West. Additional topics of study will include landscape tourism, mapping, built environments, national parks, the preservationist impulse, and the role of the landscape in Euro-American and Native American literature. Placing primary interpretive texts against more recent methodologies, this course will locate the nationalistic, social and cultural dimensions of the American landscape, while also scrutinizing iconographic and contextual meanings in works of landscape art.

**AH 412 WHAT PHOTO IS**

**AH 413 RACE & GENDER IN POP FILM**

This course explores Hollywood's fascination with race and gender as social issues and as spectacles. In particular, we will focus on the ways that social difference have become the sites of conflicted narrative and visual interactions in our films. To examine competing representations of racial difference and sexual difference in US culture, we analyze popular films from the 1950's to the present.

**AH 415 SEM IN CONT ART: PERF**

Spring 2010. Please see AH 215 for description.

**AH 416 ORIENTALISM ART & ARCH**

**AH 418 PHOTO IN EAST ASIA**

**AH 422 PHOTOGRAPHIC PRESERVATION I**

**AH 423 COLLECTIONS MANAGEMENT**

**AH 424 HISTORY OF PHOTOGRAPHY II**

This history of photography through the careful study of photographic objects from the collection at GEH. We will investigate the ways in which technological change influences the practice of image making, and the way the needs and dreams of artists, scientists and ordinary citizens inspired new uses of cameras and photographic materials. We will seek to understand the historical, cultural and artistic context within which photographic images were first seen and used, and also to understand how meanings and uses of those images change over time. In addition to seminar participation, students will conduct original research about a photograph, photographer, or body of work using methods we develop over the semester to produce a paper that illuminates their chosen subject, showing how it fits within a larger history of photography, and within the history of the time and place from which it has come.

**AH 425 PHOTOGRAPHIC PRESERVATION II**

**AH 427 POETICS OF TELEVISION**

**AH 428 THE ART MARKET**

**AH 430 HISTORY OF PHOTOGRAPHY**

**AH 436 HISTORY OF FRENCH CINEMA**
This course examines Christian art in its cultural context in Eastern Europe, the Near East, and the Slavic world. The main theme will be the art of the Byzantine Empire centered in Constantinople until 1453, but in addition, we will look at developments in Post Byzantine Greece, the Balkans, Bulgaria, Kievan Rus', Armenia, and Georgia.

**AH 437 ISLAMIC ARCH IN CONTEXT**

**AH 438 IMPRESS & POST IMPRESS**

**AH 440 TOP CONT ART & CRIT: WARHOL**

As the most famous artist of the second half of the twentieth century, Warhol has been the subject of a growing literature that expands upon art history and criticism to encompass queer theory and cultural studies. But the most important shift in Warhol's reception has been brought about by the restoration and return to circulation of his prolific film output from the years 1963-69. The films will be the main focus of this course, but we will also consider Warhol's early work as a fashion illustrator, his entrepreneurship at the Factory, his voracious collecting, and, of course, his paintings. We will read Warhol's writings, including *A Novel: The Philosophy of Andy Warhol*, and *Popism*; and we will examine new approaches to Warhol and ask how they illuminate not only the art but also such issues as consumption, publicity, visibility, celebrity, sexuality, identity, and selfhood.

**AH 441 AESTHETICS**

**AH 442 HIST OF PHOTO: 1839-1915**

**AH 448 FRENCH PHILOSOPHY SINCE 1960**

**AH 450 AGE OF BAROQUE**

Spring 2010. Please see AH 250 for description.

**AH 453 FILM HISTORY: 1929-1959**

**AH 454 FILM HISTORY: 1959-1989**

This course will explore developments in world cinema—industrial, social, and political—from 1959 to 1989. It will explore film aesthetics, technologies, and circulation questions, considering questions like the following: What's new about the French New Wave? What do we mean by Third Cinema? How do different national cinemas influence each other? In what ways have various national cinemas responded critically to Hollywood’s commercial dominance and to its conventions? How do popular and “art” cinemas speak to each other. How does cinema respond to the pressures and provocations of other media at the inception of the digital age? Weekly screenings and film journals required. FMS 132, “Introduction to the Art of Film,” typically a prerequisite.

**AH 455 ARTS IN AMERICAN CULTURE**

What did it mean to be American? What did America look like, geographically and in terms of its people? What part did art and photography play in documenting and giving an identity to Americans in the century between 1850 and 1950? Attention will be given to documenting and representing the West, immigration, and the emerging urban environment. Students will work with the collections of George Eastman House and the Memorial Art Gallery. Requirements for the course include a short museum paper, a term paper, with draft, and take-home midterm and final exams.

**AH 462 IMPRESSIONISM & POST-IMPRESS**

Spring 2010. Please see AH 262 for description.

**AH 463 20TH CENTURY ART & CULTURE**

This course will explore selected aspects of twentieth-century art, including issues of identity, difference, and the body and ways in which institutions have shaped art. Works in different media will be considered, including examples from George Eastman House. The course will focus on a limited time period or a theme.

**AH 464 FILMS OF THE 1930S**

**AH 465 PHOTO IN SP & SP AMERICA**

University of Rochester
AH 468 MIDDLE EASTERN CINEMA

AH 470 CONTEMPORARY CHINESE ART

AH 474 CULTURE HIS OF AMER ARCH

AH 478 POPULAR FILM GENRES: FILM NOIR

AH 479 CLOCKS AND COMPUTERS

AH 481 ART & CITY: NY IN THE 70'S
The recession & fiscal crisis of the 1970s was paradoxically a highly productive period of artistic experimentation in New York City. In the wake of the transforming art movements of the 1960s--Pop, Minimalism, and Conceptual Art--the 1970s saw the invention of new and hybrid media: video art, performance art, & site-specific installation works. By the end of the decade a new group of artists that came to be known as the Pictures Generation began showing in alternative spaces such as Artists Space. In this seminar we will study how the de-industrialization of New York contributed to new kinds of art making & examine how art works take the city as their subject. Among the artists we will consider are Bernd & Hilla Becher, Gordon Matta-Clark, Joan Jonas, Peter Hujar, Danny Lyon, Cindy Sherman, and Thomas Struth. Avant-garde film also took the city as its subject; the course will include the work such film & video-makers as Dara Birnbaum, Ernie Gehr, Peter Hutton, Babette Mangolte, and Charles Simonds.

AH 487 CULTURE ON DISPLAY
This course looks at the phenomenon of the museum, asking questions about the relation of culture and institutions. How do museums and the selection of what things go into them and the way objects are arranged and displayed shape the way we think about our past, about art? Why are "natural history" and "history" and "art" displayed in different institutions? What are the implications of reproduction for the "original"? Do museums have a future?

AH 488 PHILOSOPHY OF ART

AH 491 INDEPENDENT STUDY

AH 493 SPECIAL TOPICS

AH 506 THE SUBLIME
The principal objective of the course is to undertake a reevaluation of the received ideas associated with the operation of the sublime in 18th century art, literature and thought. We will consider first the concept in the writings of Edmund Burke and Immanuel Kant, the better to understand the parameters of a notion that shaped not only 18th century aesthetic theory but also provided the conditions for the advent of Romanticism. Following this groundwork we will consider a series of topics, including the paintings of Joseph Wright of Derby, Fuseli's illustrations to John Milton, the art and poetry of William Blake, the writings of Ralph Waldo Emerson, and the American Sublime. Themes in the course will include the classical sublime, the scientific industrial sublime, the beautiful and the sublime, the picturesque, the natural sublime, the transcendental sublime; and the romantic sublime.

AH 507 RHETORIC OF THE FRAME
The task of any discussion of frames and framing in the visual arts whether in painting, sculpture, film, performance, architecture, graphic novels and cartoon strips, or digital media - is first and foremost to counter the tendency of framing devices to invisibility with respect to the artwork they supposedly contain. We see the work, but we do not see the frame. It is against this tendency to ignore the frame that this seminar is directed. At first glance the frame may seem to be as unproblematic. Starting from a consideration of the foundational texts of frame theory in the philosophy of Immanuel Kant, we will examine the discursive limits of the material and non-material border in the writings of, among others, Mayer Schapiro, Martin Heidegger, Jean-Claude Lebensztejn, Louis Marin, Craig Owens, and Jacques Derrida.

AH 508 MIMESE: THEORY & PRACTICE

AH 511 DANCE, ART AND FILM
This course explores relations among dance, art, and film at significant moments in the 20th & 21st centuries. We will study instances in which the forms are closely aligned, including the famous productions by artists Goncharova, Picasso, & Matisse, for Diaghilev’s Ballets Russes; Martha Graham’s partnership with Isamu Noguchi; & Merce Cunningham’s work with Robert Rauschenberg. We will look simply at how dance is filmed or how dance uses film. The course will concentrate on two figures of the postwar American avant-garde: Merce Cunningham & Yvonne Rainer. Cunningham’s dances choreographed for film in collaboration with film & video makers & Rainer’s move from choreography to filmmaking & eventually to hybrids of the two will constitute the core of the course. Other major figures will be explored: choreographers George Balanchine, Doris Humphrey, Trisha Brown, William Forsythe, Anne Teresa De Keersmaeker; & filmmakers Maya Deren, Ed Emshwiller; Babette Mangolte, Dominique Delouche, Thierry de May, etc.

AH 513 ARCHITECTURE, PHOTOGRAPHY, MODERNISM/POSTMODERNISM
The subject of this course is inspired by a series of photographs commissioned from Hiroshi Sugimoto for the Los Angeles Museum of Contemporary Arts’ exhibition At the End of the Century: One Hundred Years of Architecture. Sugimoto’s photographs show canonical works of modern architecture shot out of focus, reduced to both icon and phantom. The seminar considers the changing relations between photography and architecture, between image and space, between picture and object from the advent of modernism to the present. The course looks at these relations in the New Objectivity and the New Vision, Surrealism, the International Style, Mid-Century Modern, and ends by considering the uses of the photography of architecture in Conceptual art and the fascination with modernist architecture in contemporary photographic work. Students read critical studies of modernist architecture and photography and plot the relations between these discourses and practices.

AH 519 MATERIAL CULTURE
This upper-level course interrogates the cultural meaning of things in an increasingly digital age. Paying attention to objects in their native as well as virtual frameworks, we will look at a variety of media (film, photography, fine art, popular culture) in material and on-line contexts to investigate paradigm shifts in 21st century scholarship, archiving, and understanding of material culture.

AH 520 THE POLITICS OF SPACE
Spring 2010. Please see AH 320 for description.

AH 520M THE POLITICS OF SPACE

AH 525 AUTHORSHIP: ANXIETY OF INFLUENCE
Authorship is a key issue in both contemporary art practices and in visual culture, where it is frequently dispersed by social groups, by mediums (including such loosely defined “ mediums” as the city or the public), and even theoretical frameworks (e.g. of postnationality, postracial identity, or the problematic of equality). This course lays out the prehistory of contemporary approaches to authorship in critical theory and practice. It is a reading-intensive seminar based on weekly discussions and the development of individual research projects.

AH 540 THE ART OF INDUSTRY
Where do technological rationalism and aesthetic beauty converge? The course will address this question through an examination of things and places produced from the advent of the Industrial Revolution to the present, with a specific emphasis on the built environment as well as global contexts of industrial production. Theoretical and primary texts, including works by Marx, Benjamin, Loos, Le Corbusier, Kracauer, Banham and Appadurai, will contextualize a series of thematic concerns including the rise of an industrial vernacular, the “machine aesthetic”, the interrelationship of form and function, international transmutations of technology, Taylorism and Fordism, mass production and the industrial ruin. Subjects considered will include factories and plants, mass housing systems, objects of industrial design as well as artistic representations thereof. The course will be rooted in discussion but may be supplemented by formal presentations as appropriate.

AH 541 ART OF INFRASTRUCTURE

AH 555 FEMINIST FILM THEORY
Feminism has had a powerful impact on the developing field of film theory from the 1970s to the present. This course will examine the major feminist work on film, moving from the earlier text-based psychoanalytic theories of representation to theories of feminine spectatorship to studies of reception contexts and audience. We will also give attention to the very important role of feminist theory in television studies. Weekly screenings, keyed to the readings, will allow us to test the value of these positions
for close critical analysis of the film or television text. Readings to include: Laura Mulvey, Kaja Silverman, Constance Penley, Judith Mayne, Linda Williams, Jacqueline Bobo, Valerie Smith, Lynn Spigel, Lynne Joyrich, Julie D'Acci.

AH 561 CLASSICAL FILM THEORY
This course examines the philosophical, aesthetic, and social issues that are central to classical film theory. It traces the historical development of film theory from 1900 to the 1950s. We will begin with on thinkers in the period of early cinema, including Germaine Dulac, Jean and Marie Epstein, and then we will examine the development of film theory in the work of later theorists, such as Jean Mitry, Sergei Eisenstein, Dziga Vertov, Siegfried Kracauer, Walter Benjamin, Andre Bazin and Christian Metz. Weekly screenings of historically contemporary films will allow us to examine the ongoing dialogue between the evolving medium and the developing theoretical discussion.

AH 583 VISUAL & CULTURAL STUDIES
The Colloquium introduces students in the Visual and Cultural Studies Program to aspects of the histories, theories, and methodologies of our field of study. We proceed in three ways: First, we read and discuss together a series of texts on and in visual and cultural studies. Second, various faculty members in the program conduct sessions in their areas of expertise based on readings that they select for us. And third, each student presents his or her own work to the colloquium. For this final part, it is important that students engage with visual and cultural studies models and provide relevant readings to other members of the colloquium.

AH 584 RESEARCH SEMINAR IN VCS
This course is designed to help students rewrite seminar papers towards either publication or use in a dissertation. It is also designed to teach students to become better editors (of others as well as of their own work). Interested students must enter with a project they want to work on (a term paper at least 15-20 pp in length). A two-credit course, it will meet as needed (depending on the number of students) at times and places TBA. Open only to VCS students in coursework.

AH 585 VIS CULT OF HERITAGE & IDENT

AH 586V YORK WUN PHD VISITING STUDNT

AH 590 PHD READINGS

AH 591 INDEPENDENT STUDY

AH 594 PHD RESEARCH INTERNSHIP

AH 595 PHD RES/VIS&CULTRL STUDIES

AH 595A PHD RESEARCH IN ABSENTIA

AH 595B PHD RSRCH IN ABSENTIA ABROAD

AH 598 SENIOR SEMINAR:FRAMING THE SELF IN PHOTOGRAPHY
While the “selfie” phenomenon continues to thrive in global pop culture, what the term signifies remains unclear. Much as how the uncritical term “picture” is used to describe any photographic image, the neologism “selfie” first denoted self-portraiture of a special kind, but has also come to function as shorthand for any photo-portrait of a living being. Behind such lexical confusion is a larger generative force at work: photography’s pervasive role in framing selfhood, subjectivity, and identity in the modern era. Since its invention, the photographic image has framed and reframed the fluid concept of the self through various artistic, social, technological, and conceptual practices. Engaging philosophy, art history, and photography theory, this course examines how photography has been used to give shape to various philosophies of the self, from the theory of autonomy put forward by Enlightenment philosophers to that of identity embedded within social construction as proposed by numerous critical theorists.

AH 895 CONT OF MASTERS ENR

AH 899 MASTER'S THESIS

University of Rochester
AH 985 LEAVE OF ABSENCE

AH 986V FULL TIME VISITING STUDENT

AH 990 SUMMER IN RESIDENCE

AH 995 CONT OF DOCTORAL ENROLLMENT

AH 997 DOCTORAL DISSERTATION

AH 997A DOCT DISSERTATN IN ABSENTIA

AH 997B DOC DISS IN-ABSENTIA ABROAD

AH 999 DOCTORAL DISSERTATION

AH 999A DOCT DISSERTATN IN ABSENTIA

AH 999B DOC DISS IN-ABSENTIA ABROAD

AME 140 INTRO TO AUDIO MUSIC & ENGIN
Provides an introduction to the science and technology of audio. Students will learn about the vibration of strings, musical tuning systems, overtones and timbre, modes of oscillation through the concept of a guitar. Fourier analysis, transducers and passive electrical components and circuits will be introduced when discussing amps and audio components. Hands on projects introduce the fundamental concepts of electronics, including voltage, current, resistance and impedance, basic circuit analysis, ac circuits, impedance matching, and analog signals. The course then introduces basic digital signal processing concepts, where they will use Arduinos and Pure Data to learn about conversion of sound to digital format, frequency analysis, digital filtering and signal processing and musical sound synthesis. AME140 is recommended as an introduction to the Audio and Music Engineering major but is accessible to students of music or other non-technical disciplines who wish to learn the fundamentals of music technology. Offered: Fall

AME 191 ART AND TECH OF RECORDING
This course covers the acoustical and psychoacoustic fundamentals of audio recording including the nature of sound, sound pressure level, frequency and pitch, hearing and sound perception, reflection, absorption and diffusion of sound, sound diffraction, room acoustics, reverberation, and studio design principles. The course also provides practical experience in audio recording including an introduction to recording studio equipment, microphones and microphone placement techniques, signal flow, amplification, analog and digital recording, analog to digital conversion, digital processing of sound, multi-track recording and an introduction to mixing and mastering. Each student is required to complete a substantive recording project at the end of the course. Offered: Fall Spring

AME 192 LISTENING AND AUDIO PROD
This course is a continuation of AME191. Emphasis is on the development of critical listening skills and proficiency in audio mixing and mastering. Fundamental topics covered include the human auditory system, theories of hearing and audio perception, perception of loudness and pitch, critical bands and auditory masking, beats and roughness, temporal and pitch acuity, binaural hearing. Listening skills development include hearing “width” and “depth” in audio, mixing techniques in various musical genres, recognition of various effects including reverb, delay, compression, phasing and distortion. Production skills development includes equalization and achieving spectral balance, the use of compression and dynamic range control, achieving depth and dimension in recordings, panning and auditory scene control. Offered: Fall Spring

AME 193 SOUND DESIGN
The course is intended to provide students a basic understanding of sound design, audio recording, and working with sound for picture. The emphasis is on demonstrations and hands-on The course is intended to provide students a basic understanding
of sound design, and working with sound for picture. The emphasis is on demonstrations and hands-on experience to enable students to gain a practical knowledge of sound and music production using computers. Topics include synthesizers & samplers; recording and editing with Pro Tools; sound effect creation; foley & automatic dialog replacement; basic soundtrack composition; and working to picture. Many techniques are explored employing software and hardware based sound creation tools throughout the course. Students will complete a major project at the conclusion of the course.

Offered: Fall Spring

**AME 194 AUDIO FOR VISUAL MEDIA**

This course is intended to provide students with a basic understanding of the process and the skills for creating music for picture. The course emphasizes hands-on experience where students gain practical skills in scoring to picture using computers and it features guest lectures by industry leading professionals, who will share their insights on creating music for TV Shows, Advertising, Movies, Gaming, Animation, and Industrial Work. Topics also include soft synthesizers, samplers and virtual instruments; recording and editing with Pro Tools and Logic; and sound design on audio workstations. Students will complete a number of projects throughout the course.

Offered: Spring

**AME 196 Interactive Music Programming**

In this course, students will explore digital audio synthesis and real-time interactive technologies by studying two audio programming languages, ChucK and Pure Data. They will be able to manipulate sound with MIDI controllers, laptops, mobile devices, joysticks, mice, and Wiimotes. Students will have a midterm presentation to demonstrate their programs in ChucK and at the end of the semester, we will have an interactive performance showcase. This interdisciplinary course does not require any programming experience.

Offered: Fall

**AME 223 AUDIO ELECTRONICS**

The devices, circuits, and techniques of audio electronics are covered in this course. Included is a survey of small signal amplifier designs and small-signal analysis and characterization, operational amplifiers and audio applications of opamps, large-signal design and analysis methods including an overview of linear and switching power amplifiers. The course also covers the design of vacuum tube circuits, nonlinearity and distortion. Other important audio devices are also covered including microphones, loudspeakers, analog to digital and digital to analog converters, and low-noise audio equipment design principles.

Offered: Spring

**AME 233 MUSICAL ACOUSTICS**

Engineering aspects of acoustics. Review of oscillators, vibratory motion, the acoustic wave equation, reflection, transmission and absorption of sound, radiation and diffraction of acoustic waves. Resonators, hearing and speech, architectural and environmental acoustics.

Offered: Fall

**AME 240 Revolutions in Sound: Artistic and Technical Evolution of Sound Recording**

This course aims to provide a multifaceted account of the history of recording and reproduction, from Edison’s 1877 invention of the phonograph to digital recording, MP3, and audio streaming. In reviewing the major innovations in recording technology, we will focus on the changes in the quality and aesthetics of recorded sound, as well as the evolving roles of engineers, producers, and musicians in commercial recording. In addition, this course will investigate how technology has shaped musical experience, and how different types of music, including classical, jazz, popular, and folk, have in turn influenced the development of recording technology.

Offered: Spring

**AME 262 AUDIO SOFTWARE DESIGN I**

This course aims to give students the ability to develop their own audio/music programs in C and a few major open-source audio programming languages. It begins with an introduction to computer music and audio programming, and a comparative survey of audio programming languages. After an overview of the C language, we then explore the topics of programming for sound synthesis. The second half of this course introduces the primary techniques of sound design using the audio programming
environments of Pure Data and CSound. Students will practice their programming techniques through a series of programming assignments and a final project.

Offered: Fall

**AME 263 COMP MODELS OF MUSIC**
We will explore various computational approaches to musical problems (rule-based approaches, connectionism, dynamic systems, and probabilistic models), focusing on two main areas: 1) models of musical processing and information retrieval; 2) models of musical styles. Our focus will be on the symbolic level of music representation rather than on the signal level (there will be no signal processing in this course). Most assignments will consist of reading articles and answering questions about them. There will be some programming assignments, with other options for students without programming ability.

Offered: Spring

**AME 264 AUDIO SOFTWARE DESIGN II**
This course is a sequel to AME262/ECE475 Audio Software Design I. The first part of the course will explore designing audio effect plug-ins with Faust and C++. Students will learn how to design plug-ins for Pro Tools, Logic and other digital audio workstations (DAWs). The second part of the course will focus on audio programming for iOS apps with Objective-C and Swift. Students will learn how to make musical apps, including a guitar tuner app. A special topic will introduce audio programming for video games.

Offered: Spring

**AME 271 COMP MODELS OF MUSIC Processes**
This course is designed for engineering and science students to learn the basic elements of music theory and analysis, but employing concepts and tools from digital signal processing, pattern classification, machine learning and data mining. Class requirements include weekly readings and programming assignments, and a final project in which students complete an analysis of a large-scale symphonic work combining their subjective aesthetic response to the piece with the computational analysis using the tools developed throughout the course.

Offered: Spring

**AME 272 AUDIO SIGNAL PROCESSING**
This course is a survey of audio digital signal processing fundamentals and applications. Topics include sampling and quantization, analog to digital converters, time and frequency domains, spectral analysis, vocoding, digital filters, audio effects, music audio analysis and synthesis, and other advanced topics in audio signal processing. Implementation of algorithms using Matlab and on dedicated DSP platforms is emphasized.

Offered: Spring

**AME 277 COMPUTER AUDITION**
See AME 477

Offered: Fall

**AME 292 ACOUSTICS PORTFOLIO**
This is a follow on course to AME233, Musical Acoustics. In this course students will complete a major project in acoustics, such as the acoustical characterization of an architectural space, design or re-design of an architectural or studio space, development of acoustical computer simulation tools, design or characterization of acoustic musical instruments, design and fabrication of loudspeakers, design and implementation of a live sound or sound reinforcement system, or any other project in acoustics with the agreement of the instructor. Weekly meetings and progress reports are required.

Offered: Fall

**AME 294 AUDIO DSP PORTFOLIO - LAB**
This is a follow on course to AME272, Audio Digital Signal Processing. Students will complete a major design/build project in the area of audio digital signal processing in this course. Examples include a real-time audio effects processor, music synthesizer or sound analyzer or other projects of student interest. Weekly meetings and progress reports are required.

Offered: Fall Spring
AMERICAN UNIVERSITY

Arts Sciences and Engineering Courses

AME 295 AUDIO ELECTRONICS PORTFOLIO
This is a follow on course to AME223, Audio Electronics. In this course students will complete a major design/build project in the area of audio electronics. Examples include a solid state or tube-based instrument amplifier, audio power amplifier, audio effects processor, audio analog/digital interface or any other audio electronic project with the agreement of the instructor. Weekly meetings and progress reports are required.
Offered: Spring

AME 386 SENIOR DES PORTFOLIO I
Senior Design Project in Audio and Music Engineering. In this first semester of the year-long AME Senior Project course students will define their product, possibly in collaboration with an outside customer, and then develop product concept documentation, detailed requirements specifications, system level designs, detailed sub-system designs and hopefully build demonstration prototypes.
Offered: Fall

AME 387 SENIOR DESIGN PROJECT II
Senior Design Project in Audio and Music Engineering. In the second semester of the year-long AME Senior Project course students will complete their projects including final system level designs, detailed sub-system designs, prototype building, testing, evaluation and final presentation to the customer.
Offered: Spring

AME 391 INDEPENDENT STUDY

AME 462 AUDIO SOFTWARE DESIGN

AME 471 COMP MODELS OF MUSIC PROC
This course is designed for engineering and science students to learn the basic elements of music theory and analysis, but employing concepts and tools from digital signal processing, pattern classification, machine learning and data mining. Class requirements include weekly readings and programming assignments, and a final project in which students complete an analysis of a large-scale symphonic work combining their subjective aesthetic response to the piece with the computational analysis using the tools developed throughout the course. A knowledge of the rudiments of musical notation is helpful, but not a prerequisite.
Offered: Spring

AME 472 AUDIO SIGNAL PROC
This course is a survey of audio digital signal processing fundamentals and applications. Topics include sampling and quantization, analog to digital converters, time and frequency domains, spectral analysis, vocoding, digital filters, audio effects, music audio analysis and synthesis, and other advanced topics in audio signal processing. Implementation of algorithms using Matlab and on dedicated DSP platforms is emphasized.
Offered: Spring

AME 477 COMPUTER AUDITION
Computer audition is the study of how to design a computational system that can analyze and process auditory scenes. Problems in this field include source separation (splitting audio mixtures into individual source tracks), pitch estimation (estimating the pitches played by each instrument), streaming (finding which sounds belong to a single event/source), source localization (finding where the sound comes from) and source identification (labeling a sound source).

AME 491 MASTER'S READING

AMS 200 IDEA OF AMERICA
Explores issues in recent scholarly writing about American culture, past and present, from an interdisciplinary perspective.
Offered: Fall

ANT 101 CULTURAL ANTHROPOLOGY
Provide an understanding of cultural variation and how anthropologists interpret it.
Offered: Fall Spring

**ANT 102** INTRODUCTION TO MEDICAL ANTHROPOLOGY
Exploration of anthropological interpretation, research, and writing on the ways different peoples understand and deal with issues of illness and disease.
Offered: Fall

**ANT 104** CONTEMPORARY ISSUES & ANTHROPOLOGY
The course shows distinctive ways anthropologists study the world, and considers how ethnographic research can contribute to our understanding of pressing contemporary social problems and their solutions.
Offered: Fall

**ANT 105** LANGUAGE & CULTURE

**ANT 110** INTRODUCTION TO LINGUISTIC ANALYSIS
Investigates the structure of human language, covering the basic techniques and concepts in the subfields of contemporary linguistic analysis.

**ANT 120** JUSTICE AND EQUALITY

**ANT 201** THEORY AND METHOD IN ANTHROPOLOGY
A survey of major developments in anthropological thought. Explore the relationship between sociocultural theory and the methodologies used by anthropologists to conduct ethnographic research.
Offered: Spring

**ANT 202** MODERN SOCIAL THEORY: KEY TEXTS & ISSUES
A close textual analysis by authors who established the framework of modern social theory, such as Karl Marx, Max Weber and Sigmund Freud.
Offered: Fall

**ANT 203** RITUAL, MYTH & COSMOLOGY
Major anthropological approaches to the study of the symbolic knowledge embedded in life-cycle rituals, origin myths and religious scriptures.
Offered: Fall

**ANT 204** ETHNOGRAPHIC THEMES
The role ethnographic texts play in posing and answering questions about human culture and society.
Offered: Spring

**ANT 205** THEORIES & DEBATES IN ANTHROPOLOGY
Contemporary and historical debates which have shaped theory and method in cultural anthropology, showing how they have shifted over time and differed between national traditions.
Offered: Spring

**ANT 213** WORLD MUSICS
Some of the world's major music traditions, including theater music from China and Japan, Indian and Indonesian classical music, ritual and ceremonial music from West Africa, Eastern Europe, and the United States. Focuses on musical sound structures as well as social, political, and religious contexts for musical performances.
Offered: Fall
ANT 214 LOVE, FRIENDSHIP & COMMUNITY
A neurosociological perspective on strong interaction and strong personal ties - high-frequency social dynamics marked by strong mutual coupling.
Offered: Fall

ANT 215 PUBLIC HEALTH ANTHROPOLOGY
Using a critical lens, this course examines how forms of social organization create good health for some groups and poor health for other groups.
Offered: Spring

ANT 216 MEDICAL ANTHROPOLOGY
Cultural and social dimensions of health and illness including the political and economic dimensions.
Offered: Spring Summer

ANT 219 MULTIS TOPICS SUSTAINABIL
The goal of this class is to acquaint students with a range of topics in the natural and social sciences that relate to environmental change.
Offered: Spring

ANT 222 MATERIALITY & MEANING
In this course, we will explore the social and communicative roles that objects play in human society and investigate how people use objects to communicate, rebel, exert power, or make sense of the world around them in both market and non-market contexts.
Offered: Spring

ANT 224 ANTHROPOLOGY OF DEVELOPMENT
Major trends in the anthropological study of international development through ethnographic case studies from around the world.
Offered: Spring

ANT 225 SOCIAL USES OF MEDIA
An anthropological perspective to the study of media. We will examine constructions of media as objects of social scientific analysis, as both textual artifacts and social practice.
Offered: Fall Spring

ANT 226 CULTURE AND CONSUMPTION
Anthropological approaches to the study of mass consumption and material culture. Specific topics for investigation include: possessions and personhood; the history of modern consumerism in the West; fashion and social status; and the globalization of markets.

ANT 227 LOCAL & GLOBAL MARKET RESEARCH
Focuses on understanding consumer behavior in terms of cultural symbols and values. It shows how an ethnographic approach to market research contributes to development of marketing and advertising strategies.
Offered: Fall

ANT 229 WAR AND MIGRATION
Post-1945 migrations to the U.S. through the lens of war. Far-ranging impacts of American military intervention in East and Southeast Asia on migration flows and the civil rights of American citizens of Asian descent.
Offered: Spring

ANT 230 WAR, GENOCIDE & JUSTICE
This course will explore how societies attempt to achieve justice in the wake of political violence such as genocide or civil war.
Offered: Fall

**ANT 231** (IL)LEGAL ANTHROPOLOGY
Examines the power of law in the contemporary world through a focus on illegal practices.
Offered: Spring

**ANT 232** INDIGENOUS RIGHTS AND WORLDS
The history and current status of the movement for the rights of indigenous peoples in different parts of the world.
Offered: Spring

**ANT 239** LATIN AMERICAN IMMIGRATION
Contemporary ethnographies of Latin American migration, globalization, transnationalism, and international justice.
Offered: Fall

**ANT 240** MUS ETHNOGRAPHY & HIV

**ANT 246** ANTHROPOLOGICAL APPROACHES TO GENDER & SEXUALITY
This course will examine gender as a key component of social, economic, and political life.

**ANT 248** COLONIAL & CONTEMPORARY AFRICA
The impact of capitalism on African socioeconomic institutions during and after the era of formal colonialism.
Offered: Fall

**ANT 257** CHINESE SOCIETY AFTER MAO
Adopts an anthropological approach towards understanding the dramatic socio-cultural transformations that have followed in the wake of China’s post-Mao economic reforms.
Offered: Spring

**ANT 260** NATIVE AMERICAN ART & RELIGION
This examination of selected spiritual and artistic traditions of the indigenous peoples of North America will range from the Canadian Arctic to the desert southwest, as we look at various ways in which the visual arts articulate religious and philosophical systems of thought.

**ANT 264** ISLAM AND GLOBAL POLITICS
The response of the Islamic world to European colonialism and American foreign policy.
Offered: Fall

**ANT 265** GLOBAL HEALTH
The social and cultural circumstances that give rise to religious fundamentalism, explore the reasons for its attraction to adherents, and look at its contrasts with other forms of religious practice.

**ANT 266** GLOBAL CULTURE
Discussions of globalization within cultural anthropology and related disciplines. How, why, and with what consequences people and money, ideas and technologies variously move across the planet.

**ANT 267** ANTHROPOLOGY OF SOCIALISM & POST-SOCIALISM
Socialism (and its aftermath) as a cultural, political, and economic system and how it affected the everyday lives of people in China, Eastern Europe, the former Soviet Union, and elsewhere through a holistic, anthropological approach.
Offered: Spring

**ANT 268** SCIENCE, CULTURE & EXPERTISE
In this course, we will investigate how people develop knowledge about the natural and social worlds. Through these case studies, we will explore the ways in which personal relations, cultural values, and power struggles are essential to scientific production rather than peripheral to it.

Offered: Fall

**ANT 270 RADICAL SOCIAL THEORY**

This course examines the arguments and the rhetoric of radical thinkers who have tried to change the world rather than just interpret it since the revolutions of 1848.

Offered: Spring

**ANT 278 BIRTH & DEATH II: MAKING POPULATIONS HEALTHY**

Programs carried out by governments, multilateral organizations, and non governmental organizations to deal with "public problems" connected to population: communicable diseases such as TB, malaria and HIV/AIDS; famine prevention and relief; child survival, especially malnutrition and infant diarrheal disease; safe motherhood; teen pregnancy; contraception, and abortion.

Offered: Spring

**ANT 299 MALAWI IMMERSION SEMINAR**

A three week study abroad/experiential learning program focusing on the health, social, political and cultural issues in Malawi, Africa.

Offered: Summer

**ANT 303 ADVANCED TOPIC SEMINAR: TRANSATLANTIC ETHNOGRAPHIES**

This class will be based on recent anthropological studies of the transatlantic world, with a special emphasis on Brazil, a country which epitomizes many of the most significant changes that are transforming the Americas today. Readings will cover a broad cross section of topics currently studied by anthropologists of the transatlantic, including class dynamics, wealth and poverty, gender, historical memory, race, national identity, popular culture, and the environment.

Offered: Fall

**ANT 306 ADV TOP SEM: THE CORPORATION**

This seminar considers the prospects for an anthropology of corporations that focuses on the specific historical, legal, and structural features of the modern for-profit, investor-owned business corporation.

Offered: Spring

**ANT 307 ADV TOP SEM: POST-HUMANISM**

Investigates recent trends in anthropology and related disciplines that examine and push the limits of being human.

Offered: Fall

**ANT 308 ADVANCED TOPIC SEMINAR: ANTHROPOLOGY OF LAND & ENERGY**

Energy production is tied to land: whether coal, natural gas, oil, biofuel, wind, water, or solar. This seminar focuses on the cultural politics of land use associated with changing forms of energy production and consumption in the world today.

**ANT 309 ADV SEM: INDIGINEOUS PEOP MOV**

The legal, political, and philosophical dimensions of the concept of indigenous peoples.

Offered: Spring

**ANT 310K SOCIAL NETWORK THEORY & ENTREPRENEURIAL ACTIVITY IN SILICON VALLEY I**

Network theory is at the forefront of an emerging collaboration among academics, with many new and interesting interdisciplinary implications, especially for entrepreneurship. Students will analyze cutting-edge research and network modeling techniques.

Offered: Spring
ANT 311K SOCIAL NETWORK THEORY & ENTREPRENEURIAL ACTIVITY IN SILICON VALLEY II
This course is designed for students who have already taken SOC/ANT 310K. It aims to deepen and extend skills in the same areas for which 310K was an introduction: social network theory and the new sociology of business and entrepreneurial activity.
Offered: Spring

ANT 384 VISUAL CULTURE OF HERITAGE & IDENTITY
How people (through the collectivities of gender, ethnicity, race, or nation) construct visual narratives about the past.

ANT 390 SUPERVISED TEACHING
For ANT 101, Cultural Anthropology. By application only. The TA program requires students to work in teams and to lead group discussion.

ANT 391 INDEPENDENT STUDY

ANT 392 PRACTICUM IN ANTHROPOLOGY

ANT 393 HONORS RESEARCH & ANTHROPOLOGY

ANT 393W SENIOR PROJECT

ANT 394 INTERNSHIP
Internships will be graded on a pass/fail basis only.

ANT 395 READINGS IN ANTHRO

ANT 416 MEDICAL ANTHROPOLOGY

ANT 422 MATERIALITY & MEANING

ANT 425 SOCIAL USES OF MEDIA

ANT 426 CULTURE AND CONSUMPTION

ANT 457 CHINESE SOCIETY AFTER MAO

ANT 464 ISLAM AND GLOBAL POLITICS

ANT 466 GLOBAL CULTURE

ANT 468 SCIENCE, CULTURE & EXPERTISE
In this course, we will investigate how people develop knowledge about the natural and social worlds. Through these case studies, we will explore the ways in which personal relations, cultural values, and power struggles are essential to scientific production rather than peripheral to it.

ANT 470 RADICAL SOCIAL THEORY

ANT 491 MASTER’S READINGS IN ANTHRO

ANT 493 MASTER’S ESSAY

ANT 495 MASTER’S RESEARCH IN ANTHRO

ANT 499 MALAWI IMMERSION SEMINAR
A three week study abroad/experiential learning program focusing on the health, social, political and cultural issues in Malawi, Africa.
Offered: Summer

**ANT 506 ADV TOP SEM: THE CORPORATION**
This seminar considers the prospects for an anthropology of corporations that focuses on the specific historical, legal, and structural features of the modern for-profit, investor-owned business corporation.

**ANT 507 ADV TOP SEM: POST-HUMANISM**

**ANT 509 ADV SEM: INDIGINEOUS PEOP MOV**

**ANT 591 PHD READINGS IN ANTHROPOLOGY**

**ANT 592 GRAD TEACHING ASSISTANTSHIP**

**ANT 595 PHD RESEARCH IN ANTHROPOLOGY**

**ANT 595A PHD RESEARCH IN ABSENTIA**

**ANT 895 CONT OF MASTER'S ENROLLMENT**

**ANT 899 MASTER'S DISSERTATION**

**ANT 985 LEAVE OF ABSENCE**

**ANT 986V FULL TIME VISITING STUDENT**

**ANT 995 CONT OF DOCTORAL ENROLLMENT**

**ANT 997 DOCTORAL DISSERTATION**

**ANT 997A DOCT DISSERTATN IN ABSENTIA**

**ANT 999 DOCTORAL DISSERTATION**

**ANT 999A DOCT DISSERTATN IN ABSENTIA**

**ARA 101 ELEMENTARY ARABIC I**
An introduction to Modern Standard Arabic including the alphabet, pronunciation, vocabulary, grammar, elementary conversation, and reading.
Offered: Fall

**ARA 102 ELEMENTARY ARABIC II**
A continuation of Arabic 101 from the Fall semester. Introduction of writing complex sentences and reading paragraphs. In addition, more vocabulary building, and longer conversational sessions. This course will require basic fundamentals of the Arabic language such as reading simple sentences and engaging in a simple conversation. This course is designed to help students gain more knowledge in their vocabularies, grammar, and oral skills.
Offered: Spring

**ARA 103 INTERMEDIATE ARABIC**
Continuation of the sequence of introductory Arabic courses. Readings and oral and written exercises introduce students to more complex sentence structures, and there is an increased emphasis on vocabulary building.
Offered: Fall

**ARA 104 INTERMEDIATE ARABIC II**
A continuation of Arabic 103. This course is designed to enable students to engage in an intermediate conversation with a native Arabic speaker in different scenarios. The course will cover all the materials which can help a student with writing and reading as a professional Arabic speaker.

Offered: Spring

**ARA 105 TOPICS IN ARABIC LANGUAGE**
This course serves as an intermediate between the 101-104 sequence and the 200 courses. The emphasis falls on morphology—recognizing word patterns, that is—vocabulary building and improving reading speed and translating short prose articles.

**ARA 148 THE ARABIAN NIGHTS**
The Arabian Nights, a classic of world literature, is discussed in term of the major themes - love and sex, comedy and adventure- that have given the stories their universal appeal and their timeless relevance. The readable English translation of Malcolm C. Lyons (Penguin Classics) is used, and classes are mostly devoted to discussion.

Offered: Fall

**ARA 149 THE ARAB REVOLUTIONS: FICTIONS AND CURRENT EVENTS IN THE ARAB WORLD**
This course combines contemporary Arabic fictions in translation with discussion of the recent history and current events of the Arab world to help us to understand what is happening there now.

**ARA 201 ARABIC PROSE SEMINAR I**
Intensive readings to increase vocabulary. Weak verbs and conditional sentences complete the study of grammar.

Offered: Fall

**ARA 202 ARABIC PROSE SEMINAR II**
Exploration of a variety of contemporary prose genres to expand the students’ vocabulary and increase their familiarity with different prose styles. Among the genres we will read will be the short story, the essay, and newspaper articles.

**ARA 203 ARABIC PROSE SEMINAR III**
This class focuses on three areas: reading and writing modern standard Arabic and conversational Arabic.

**ARA 204 ADV ARABIC PROSE SEM I**

**ARA 205 ADVANCED PROSE SEMINAR II**

**ARA 206 ADV ARABIC PROSE SEM III**
Content varies; offered upon request.

**ARA 390 SUPERVISED TEACHING**

**ARA 391 INDEPENDENT STUDY**

**ARA 391W INDEPENDENT STUDY**

**ARA 394 INTERNSHIP**

**ASL 101 BEGINNING AMERICAN SIGN LANGUAGE I**
An introductory course in American Sign Language as developed and used by the Deaf community in most areas of North America. Everyday communication is the centerpiece of every lesson. Topics revolve around sharing information about our environment and us. Grammar is introduced in context, with an emphasis on developing question and answer skills.
learn conversational strategies to help you maintain a conversation. Students will also be exposed to native signers modeling appropriate language and cultural behaviors in various situations. Interaction activities allow you to rehearse what you’ve learned.

Offered: Fall Spring

**ASL 102 BEGINNING AMERICAN SIGN LANGUAGE II**
A continuation course in American Sign Language as developed and used by the Deaf community in most areas of North America. Everyday communication is the centerpiece of every lesson with a focus on expressing the language. Topics revolve around sharing information about our environment and us. Grammar is introduced in context, with an emphasis on developing question and answer skills. You learn conversational strategies to help you maintain a conversation. Students will also be exposed to Deaf Culture/history and native signers modeling appropriate language and cultural behaviors in various situations. Interaction activities allow you to rehearse what you’ve learned. Experience with the local Deaf community is required.

Offered: Fall Spring

**ASL 105 INTERMEDIATE AMERICAN SIGN LANGUAGE I**
The third in a sequence of courses, this course focuses on further development of conversational skills in ASL. Students will acquire and expand different conversational strategies and increase ASL vocabulary. Grammatical principles and functions will be emphasized. Appropriate cultural behaviors and conversational regulators in ASL will continue to be an important part of class. Information on Deaf Culture/history will be expanded. Experience with the local Deaf community is required.

Offered: Fall Spring

**ASL 106 INTERMEDIATE AMERICAN SIGN LANGUAGE II**
The fourth in a sequence of courses, this course focuses on further development of conversational and narrative skills in ASL. Students will learn and expand different conversational strategies and increase ASL vocabulary. An introduction to analysis of grammatical principles and functions will be included. Appropriate cultural behaviors and conversational regulators in ASL will continue to be an important part of class. Experience with the local Deaf community is required. NOTE: MUST obtain permission code from ASL Program advisor to register for this course. ASL Majors & Minors will be permitted to register first.

Offered: Fall Spring

**ASL 110 COMPARATIVE STUDY OF FRENCH SIGN LANGUAGE**
An introductory course in French Sign Language (LSF) as developed and used by the Deaf community in France. Everyday communication is the centerpiece of every lesson. Topics revolve around sharing information about our environment and us. Grammar is introduced in context, with an emphasis on developing question and answer skills. You learn conversational strategies to help you maintain a conversation. Interaction activities allow you to rehearse what you’ve learned. Cultural behaviors of the Deaf Community in France will be introduced in various and appropriate situations.

Offered: Spring

**ASL 113 FRENCH SIGN LANGUAGE & DEAF CULTURE IN FRANCE**
A unique study abroad experience in France for Deaf and hearing college-level ASL students and professionals. Take this opportunity to be immersed in French Sign Language and the French Deaf Community in various settings and further your understanding of the international Deaf World. Written and spoken French are not required.

Offered: Summer

**ASL 200 SIGNED LANGUAGE STRUCTURE**
An examination of signed languages and the cognitive constraints that shape them, through a detailed consideration of the structure of American Sign Language and other natural signed languages of the world. Includes training in sign language notation and analysis.

Offered: Spring

**ASL 201 INTRODUCTION TO ASL LITERATURE**
This course will introduce students to ASL literature by studying selected videos. Student will learn the origin, characteristics of ASL literature. Emphasis will be placed on historical background, meaning of the story content, discussion of grammatical
features, styles revealed in these contexts and many different examples of literature delivered in American Sign Language (ASL): stories, humor, poems and folklore.

Offered: Fall

**ASL 202 HISTORY & CULTURE OF AMERICAN DEAF COMMUNITY**
An overview of various aspects of American Deaf culture, including descriptions of deafness, Deaf history, education, art and sports will allow students to explore and discuss issues facing the Deaf community. Contrasting a Deaf cultural view with the majority medical view will be discussed. Analysis of the local Deaf community is required.

Offered: Fall

**ASL 203 ADVANCED ASL**
The fifth in a sequence of course, this course is designed for the advanced study of ASL. It provides students with the opportunity to increase their ASL expressive competence, and to use ASL in a variety of discourse and narrative settings. Skills to be developed are: storytelling, semantic awareness analysis, in-depth exploration of ASL grammar and complex uses of space, ways of making transitions between ideas, use of classifiers, and determining appropriate perspective in specific texts. Experience with the local Deaf community through interviews is required. Satisfies the upper level writing requirement.

Offered: Fall Spring

**ASL 204 THEORY & PRACTICE OF SIGN LANGUAGE INTERPRETING**
This course introduces students to the theory and practice of Sign Language interpreting in the United States. This survey will provide students with the tools necessary for understanding: 1) the history of sign language interpreting and its impact on current models of interpreter processing, 2) the work that interpreters do, 3) the ethical foundations of the field, and 4) the multi-faceted issues related to working across languages and cultures. The course follows a seminar format and is highly interactive in nature to encourage critical thinking based on in-class discussions, assigned readings, and student projects.

Offered: Fall

**ASL 205 ART OF TRANSLATION ASL & ENGLISH**
This course will explore the meaning of translation, practice various translation methods, and analyze both written English and recorded ASL texts, with a focus on the analysis of English texts and the development of ASL translations. Extensive discussion of various types of texts and the factors that must be considered when preparing an accurate ASL or English translation will contribute to students’ translation work. Satisfies the upper level writing requirement.

Offered: Spring

**ASL 208 LANGUAGE DEVELOPMENT**
Basic introduction to children's language development; including the acquisition of phonology, syntax, and semantics. Focuses on the acquisition of a first language by young children, and compares the acquisition of various spoken and signed languages to find possible universal principles of language learning. No signing skills required. Students should have a background in at least one of the fields pertinent to the course: language structure, psycholinguistics, cognitive science, developmental psychology, or general psychology.

Offered: Spring

**ASL 209 TEACHING ASL AS A 2ND LANGUAGE**
This course is designed to provide hands-on experience in teaching different subjects in ASL and evaluating student competencies in ASL and to develop an understanding of current methods and theories regarding ASL as the classroom language. Students learn about the history of teaching and resources to support such efforts. Students are provided opportunities to practice basic teaching techniques and select appropriate materials to incorporate relevant cultural and grammatical features in their lessons. The course follows a seminar format and is highly interactive in nature to encourage discussions based on in-class lectures, assigned readings, and student teaching projects.

Offered: Spring

**ASL 210 NARRATIVE & POETIC STYLES OF ASL**
This course examines techniques for telling stories and creating different ASL literary forms throughout the course with guidance from the instructor. ASL poems on video will be analyzed for their poetic elements and devices, such as: eye gaze, role shifting, spatial referencing and appropriate use of classifiers.

Offered: Spring

**ASL 222 ASL FINE ART**

Over the course of the semester, the student will be introduced to the unique aspects of ASL Fine Arts. We will consider some original works of Fine Arts delivered in American Sign Language (ASL): Deaf writings and literature, Deaf arts, Deaf Theater and Deaf films. In addition, some questions we will explore as follows: What is ASL Fine Arts? How does ASL Fine Arts compare to other Fine Arts? How do Deaf people and ASL contribute to themes in these works? The instructor will show to you many different examples of ASL Fine Arts. Students are involved in having projects and give a presentation for each topic.

Offered: Spring

**ASL 250 SOCIO-LINGUISTICS OF DEAF COMMUNITY**

A discussion and analysis of variation in ASL and its relation to variables of social situation and identity in American Deaf communities. Topics include theoretical and methodological concepts in sociolinguistics, levels of grammatical variation, and social variables such as region, identity, register and attitude. Research includes the language behavior of Deaf signers, children of deaf adults, third culture groups and the role of hearing L2 signers in the Deaf community.

Offered: Spring

**ASL 260 LANGUAGE & PSYCHOLINGUISTICS**

An overview of the nature and processing of human languages, including comparisons between language and animal communication systems, a consideration of the biological bases of human language, and discussion of the cognitive mechanisms used in producing and understanding language. Students taking this course should have a background in at least one of the fields pertinent to the material of the course: language structure, psycholinguistics, cognitive science, or general psychology.

Offered: Fall

**ASL 280 DEAF-RELATED CAREERS**

Bringing together historical information and career preparation strategies for teaching, service provision and other related fields, this course is designed to provide an understanding of the interaction between hearing signers and deaf signers in various professional settings. Inherent in these interactions is the concept of “Third Culture”, the place where deaf and hearing people meet and relate with one another; a neutral zone where the cultures of each group sometimes co-exist and sometimes collide. The course also provides an opportunity to explore ways of navigating this Third Culture zone as hearing people work and interact with deaf people. The course follows a seminar format and is highly interactive in nature to encourage discussions based on in-class lectures, assigned readings, and student projects.

Offered: Fall

**ASL 391 INDEPENDENT STUDY**

**ASL 392 PRACTICUM**

**ASL 394 INTERNSHIP**

**ASL 395 HONORS RESEARCH**

**AST 102 RELATIVITY, BLACK HOLES AND THE BIG BANG**

A physical and astronomical (but non-mathematical) picture of the workings of Einstein's theories of relativity, and their application to cosmology and to black holes and wormholes, the most exotic and energetic objects known to scientists. Our aims in this course are two: to demystify black holes, big-bang cosmology, and the nature of space and time for non-science majors, in order that they may evaluate critically the frequent references to these esoteric concepts in the press and in popular science and science-fiction literature; and to provide non-science majors with a glimpse of the processes by which scientific theories are conceived and advanced. Typical textbook: Kip Thorne, "Black Holes and Time Warps"

Offered: Fall
AST 104 THE SOLAR SYSTEM
To acquaint the nonphysical science concentrator with aspects of the historical and modern study of the solar system, including results from space probe studies, and with theories dealing with the evolution of the solar system.
Offered: Spring

AST 105 MILKYWAY GALAXY
In this course we introduce students to our home galaxy, the Milky Way, and use the structure and contents of this normal galaxy to illustrate the origins of stars like the Sun, the origins of the chemical elements from which we are formed, and the evolution of galaxies through the life of the Universe. The emphasis in the presentation is on the descriptive astronomy and the physical principles describing the operation of the various celestial objects, with a minimum of mathematical detail. Note: AST 102, 104, 105 are offered in a three semester rotation.
Offered: Fall

AST 106 COSMIC ORIGINS OF LIFE
A review of the evidence for habitats and the building blocks of life in extraterrestrial space, the possibilities for the development of life elsewhere, and the light that these ideas cast on the origins of life on Earth. We also discuss the future of civilizations like ours, the possibilities of travel to other habitable planets, and communication between advanced cultures spread widely through space. The material we discuss will be drawn very widely from astronomy, physics, geology, chemistry, biology, paleontology and history, presented with a minimum of mathematical complexity. Typical textbook: Neal Evans, "Extraterrestrial Life," fifth edition.
Offered: Spring Summer

AST 111 THE SOLAR SYSTEM & ITS ORIGIN
A study of the the structure and composition of the individual planets and smaller solar-system bodies, the orbital dynamics and overall structure of the Solar system and its contents, and the formation of planetary systems like ours. Designed for freshmen who intend to major in science or engineering, the course involves the use of ideas learned in mathematics and physics courses taken concurrently or in high school, such as single-variable calculus, Newton's laws of motion and gravity, and the ideal-gas law. The course also includes a night-time observing project, based upon student use of professional-style telescopes and CCD cameras. Typical textbook: Guy Consolmagno and Martha Schaefer, "Worlds Apart."
Offered: Fall

AST 142 ELEMENTARY ASTROPHYSICS
Application of the physics and math techniques learned in the introductory course sequences, to the study of celestial objects outside the Solar system. We discuss stars and their formation from interstellar matter, the structure of galaxies and their distribution in the Universe, and the origins and large-scale structure of the Universe: all topics that are developed much further in the AST 200-level courses. The course also includes a night-time observing project, based upon student use of professional-style telescopes and CCD cameras. Registration of recitation is required at the time of course registration. Typical textbook: Marck Kutner, "Astronomy" A Physical Perspective," second edition.
Offered: Spring

AST 231 GRAVITATION & GENERAL RELATIVITY
Introduction to special & general relativity with applications to astrophysics & cosmology. A thorough study of special relativity & then on general relativity. The discussion of the latter begins with the connection between geometry and physics, the equivalence principle, and presentation of the metrics-the solutions to the Einstein field equation-for simple geometries. We will discuss first the spherically-symmetric (Schwarzschild) solution as an intro. to spacetime warping in strong & weak gravity; the basic physics of orbits around black holes; the connection of black holes & accretion disks; use the emergent concepts to understand astronomical objects that contain BH-accretion disk combinations, such as X-ray binaries & active galactic nuclei. Discussion on the effect of black hole rotation on the metric. Gravitational lensing will be introduced; homogeneous & isotropic (Roberts-Walker) solution, & apply this metric cosmology & the large-scale structure of the universe.
Offered: Fall

AST 232 THE MILKYWAY GALAXY
Introduction to the internal physics and astronomy of galaxies using the Milky Way as a primary example. The course will focus on the dynamics of stars and gas inside galaxies and how gravity works therein to produce the observed stellar motions and internal structures. The course will discuss both the observations and the theory of galactic structure. Homework problems and two in class exams.
Offered: Fall

**AST 241 ASTROPHYSICS I**
This introduction to the physics of stars is taken primarily by juniors and seniors majoring in physics and astronomy, physics, optics, or mathematics. The elements of radiative transfer and gas dynamics are presented and applied to the study of the atmospheres of stars. The interior structure and evolution of stars of various types are also discussed.
Offered: Spring

**AST 242 ASTROPHYSICS I**
An Introduction to Astrophysical Fluid Dynamics. This class explores topics in astrophysics while giving a solid foundation in the fundamentals of fluid mechanics. We introduce the theory of the motion of gases and fluids necessary to understand and explore a wide range of astronomical phenomena including stellar structure, supernovae blast waves and accretion discs. We will cover ideal fluid mechanics, Eulerian and Lagrangian views, conservation laws, hydrostatic equilibrium, self-similar flows, blast waves, spherical accretion and wind flows, astrophysics shocks, viscous flows, vorticity, accretion disks, atmospheric waves, hydrodynamic instabilities, and radiative heating and cooling. We will introduce finite difference numerical techniques so that dynamics in 1 dimension can be explored numerically. At the end of the term we will explore topics of recent interest such as gamma ray bursts, astrophysical turbulence or winds from exoplanets.
Offered: Spring

**AST 390 SUPERVISED TEACHING**
Introduction to the techniques of physics instruction, active observation, and participation in the teaching of an undergraduate course under the guidance of a faculty member. (Same as AST 390).
Offered: Fall Spring Summer

**AST 391 INDEPENDENT STUDY**
Normally open to seniors concentrating in physics and astronomy. Independent study project under the direction of a faculty member of the Department of Physics and Astronomy.

**AST 391W INDEPENDENT STUDY**
Normally open to seniors concentrating in physics and astronomy. Independent study project under the direction of a faculty member of the Department of Physics and Astronomy. This course can be used towards satisfying the upper level writing requirement.

**AST 393 SENIOR PROJECT**
Completion of an independent research project under the direction of a faculty member of the Department of Physics and Astronomy.
Offered: Fall Spring Summer

**AST 393W SENIOR THESIS**
Completion of an independent research project under the direction of a faculty member of the Department of Physics and Astronomy. This course includes a writing component and can be used to satisfy part of the upper-level writing requirement.
Offered: Fall Spring Summer

**AST 395 SPECIAL TOPICS**
Completion of an independent research project under the direction of a faculty member.
Offered: Fall Spring Summer

**AST 395W INDEPENDENT STUDY**
Independent research project under the direction of a faculty member of the Department of Physics and Astronomy. This course includes a writing component and can be used to satisfy part of the upper-level writing requirement.

Offered: Fall Spring Summer

**AST 554 COSMOLOGY**
Introduction to cosmology, covering the following broad topics: Introduction to the universe, introduction to general relativity, cosmological models and the Friedmann-Walker universe, thermodynamics of the early universe, particle physics of the early universe, and the formation of large-scale structure (same as PHY 554).

Offered: Fall

**AST 564 HIGH-ENERGY ASTROPHYSICS**
A survey of current research in high energy astrophysics. Topics drawn from X-ray and gamma x-ray astrophysics, supernovae and planetary nebulae, binary accretors, astrophysics of compact objects (black holes, neutron stars, white dwarfs, plasma astrophysics, magnetic field-particle interactions, cosmic rays, astrophysical jets, active galactic nuclei. (cross-list PHY 564).

**AST 565 FORMATION OF STARS & PLANETARY SYSTEMS**
Survey of theory and multi-wavelength observations related to the formation of early evolution of stars and planets. Interstellar medium, interstellar dust, molecular clouds, protostars, T Tauri stars, circumstellar disks, pre-main sequence stellar evolution, extrasolar planets and substellar objects, constraints on the protosolar nebula from meteorites and the planets.

Offered: Spring

**AST 570 SOLAR SYSTEM DYNAMICS**

Offered: Spring

**AST 591 PHD READINGS IN ASTROPHYSICS**
Special study or work, arranged individually.

Offered: Fall Spring

**AST 593 ASTRO THEORETICAL SEMINAR**
Current theoretical topics of interest are explored in considerable detail. Topics vary from year to year and reflect research interests of staff.

**AST 594 ASTRO OBSERVATIONAL SEMINAR**
Current topics of observational or experimental interest are explored in considerable detail. Topics vary from year to year and reflect research interests of staff.

**AST 595 PHD RESEARCH IN ASTROPHYSICS**
Special topics in Astronomy and Astrophysics.

**AST 595A PHD RESEARCH IN ABSENTIA**
Special topics in astronomy or astrophysics

**AST 895 CONT OF MASTERS ENROLLMENT**
AST 899 MASTER'S DISSERTATION
AST 985 LEAVE OF ABSENCE
AST 995 CONT OF DOCTORAL ENROLLMENT
AST 997 DOCTORAL DISSERTATION
AST 999 DOCTORAL DISSERTATION
AST 999A DOCT DISSERTATN IN ABSENTIA

BCS 110 NEURAL FOUNDATIONS OF BEHAVIOR
Introduces the structure and organization of the brain, and its role in perception, movement, thinking, and other behavior. Topics include the brain as a special kind of computer, localization of function, effects of brain damage and disorders, differences between human and animal brains, sex differences, perception and control of movement, sleep, regulation of body states and emotions, and development and aging.
Offered: Fall Spring Summer

BCS 111 FOUNDATIONS OF COGNITIVE SCIENCE
Introduces the organization of mental processes underlying cognition and behavior. Topics include perception, language, learning, memory, and intelligence. This course integrates knowledge of cognition generated from the field of cognitive psychology with findings from artificial intelligence and cognitive neuroscience. Students who have previously completed BCS/PSY 112 should not take BCS/PSY 111.
Offered: Fall Spring Summer

BCS 151 PERCEPTION & ACTION
Explores how the biology of our senses shapes perceptual experiences of reality. Emphasizes sense of sight primarily and hearing secondarily. An important theme is that our sensory systems play a crucial role in the execution of coordinated movements of our bodies, as we navigate in, and interact with, the environment.
Offered: Fall

BCS 152 LANGUAGE & PSYCHOLINGUISTICS
Overviews the nature and processing of human languages, including comparisons between language and animal communication systems, the biological bases of human language, and the cognitive mechanisms used in producing, understanding, and learning language.
Offered: Fall

BCS 153 COGNITION
Considers human cognitive processes, including behavioral and computational methods used to understand the nature of cognition. Explores how we perceive and integrate sensory information to build a coherent perception of the world; how we memorize and retrieve information; how we reason and solve problems.
Offered: Spring

BCS 172 DEVELOPMENT OF MIND & BRAIN
Introduces human development, focusing on the ability to perceive objects and sounds, to think and reason, and to learn and remember language and other significant patterned stimulation. Includes the nature and mechanisms of development in humans and an overview of what is known about brain and behavioral development in other species.
Offered: Spring Summer

BCS 183 ANIMAL MINDS
Considers the cognitive and communicative abilities of animals, especially primates, as compared with humans. Topics include thinking, reasoning, remembering, communicating, and understanding number, time, and causality, in animals ranging from ants to apes.
Offered: Fall

**BCS 185 SOCIAL COGNITION**

**BCS 185W SOCIAL COGNITION**

**BCS 203 LAB IN NEUROBIOLOGY**
Introduces the various methods used in neurobiological research. Covers anatomical, behavioral, molecular, and physiological approaches to studying neural organization and function and concludes with a research project that extends over a period of five weeks. STUDENTS MUST REGISTER FOR A WORKSHOP WHEN REGISTERING FOR THE MAIN SECTION.
Offered: Spring

**BCS 204 LAB IN COGNITIVE NEUROSCIENCE**
Introduces methods used in cognitive neuroscience, a field that examines cognitive phenomena in terms of their underpinnings in the brain. Covers functional anatomical approaches to studying brain function and dysfunction, behavioral and brain imaging approaches to studying learning and memory, and neuropsychological approaches to understanding sensory, motor, and cognitive processing and disorders.
Offered: Fall

**BCS 205 LAB IN DEVELOPMENT & LEARNING**
Introduces behavioral methods used to study the development of perception, cognition, and language, and provides hands-on experience in the testing of human infants and children. Includes two research projects and a final powerpoint presentation.

**BCS 206 UNDERGRADUATE RESEARCH IN COGNITIVE SCIENCE**
Students will gain experience with research methods in cognitive science by performing a project that involves replicating an important finding in the field. Students will work collaboratively in small groups, and will gain extensive hands-on experience with critical analysis of scientific literature, experimental design, programming of stimuli and behavioral tasks, data collection, statistical analysis, oral presentation, and writing of research manuscripts. Students who enroll must also enroll in BCS 207 in the following semester. The course is open to rising juniors who are declared BCS majors and rising sophomores who fully intend to declare a BCS major.
Offered: Fall

**BCS 207 ADVANCED UNDERGRADUATE RESEARCH IN COGNITIVE SCIENCE**
This course must be taken immediately following BCS 206. The goal of this advanced course is to perform a more substantial original research project that builds upon the first semester project to address a novel research question. The end-goal of the course is for each group of students to produce a research manuscript that may be of sufficient quality to be submitted for publication.
Offered: Spring

**BCS 208 LAB IN PERCEPTION & COGNITION**
Introduces behavioral and psychophysical studies of perceptual and cognitive phenomena. Students perform, analyze, interpret, and report results from experiments that move from reproducing classic phenomena to conducting new studies independently.
Offered: Spring

**BCS 220 THE INTELLIGENT EYE**
Provides an interdisciplinary view of modern research into how the human brain solves the problems involved in perception, including how we perceive the three-dimensional structure of the world, how we recognize objects and how visual information is used to control action in the world. Students read contemporary research and, through classroom discussion and critical essays, explore and analyze the questions and debates that define contemporary perceptual science.
Offered: Spring

**BCS 221 AUDITORY PERCEPTION**
This course considers how we comprehend the auditory environment. Topics include the physical stimulus for hearing, the physiology of the auditory system (both at the periphery and in the central nervous system), the psychophysics of basic auditory perception (e.g., hearing thresholds), higher level auditory perception (including auditory scene analysis and the perception of complex auditory events such as speech and music), and hearing disorders. Considers research from a diverse range of perspectives including behavioral research, cognitive neuroscience, studies of individual differences, and research that adopts a comparative perspective.

Offered: Spring

**BCS 223 VISION AND THE EYE**
This course will reveal the intricate optical and neural machinery inside the eye that allows us to see. It will describe the physical and biological processes that set the limits on our perception of patterns of light that vary in luminance and color across space and time. We will compare the human eye with the acute eyes of predatory birds and the compound eyes of insects. The course will also describe exciting new optical technologies for correcting vision and for imaging the inside of the eye with unprecedented resolution, and how these technologies can help us understand and even cure diseases of the eye.

Offered: Spring

**BCS 227 THEORY OF PERCEPTION**
This course will be an introduction to the theory and philosophy of perception, focusing on visual perception. The major topics of the course are: Are there features of perceptual experience that cannot be understood as features of represented objects? Is perception “direct” or independent upon the specifics of sensory input? Can we account for all of the features of perceptual experience in functional or computational terms? Is perception a type of computation that transforms an (impoverished) sensory input into a type of internal representation? Is perception best thought of as a hypothesis or inference about the world? Is perception separate from knowledge and cognition or does cognition permeate perception? How do conscious beliefs about the world (e.g. that something is red) relate to sensory input (e.g. seeing a strawberry)? Does perceptual knowledge transfer across sensory modalities?

Offered: Fall

**BCS 232 ARTIFICIAL INTELLIGENCE**
Introduces fundamental principles of artificial intelligence, including heuristic search, automated reasoning, handling uncertainty, and machine learning. Presents applications of AI techniques to real-world problems such as understanding the web, computer games, biomedical research, and assistive systems. This course is a prerequisite for advanced AI courses.

Offered: Spring

**BCS 233 STATISTICAL SPEECH & LANGUAGE PROCESSING**
An introduction to statistical natural language processing and automatic speech recognition techniques. This course presents the theory and practice behind the recently developed language processing technologies that enable applications such as speech-driven dictation systems, document search engines (e.g., finding web pages) and automatic machine translation. Students taking this course at the 400 level will be required to complete additional readings and/or assignments.

**BCS 235 NATURAL LANGUAGE PROCESSING**
An introduction to natural language processing: constructing computer programs that understand natural language. Topics include parsing, semantic analysis, and knowledge representation.

**BCS 236 MACHINE VISION**
Introduction to computer vision, including camera models, basic image processing, pattern and object recognition, and elements of human vision. Specific topics include geometric issues, statistical models, Hough transforms, color theory, texture, and optic flow.

**BCS 240 BASIC NEUROBIOLOGY**
Explores fundamental concepts of neural organization and function. Covers gross and cellular neuroanatomy, neuronal cell biology, the electrophysiology of neurons and synapses, neurochemistry, spinal circuitry, sensory and motor systems, and higher functions including learning and memory. Neuroscience majors must also register for a lab section - contact ugcoord@bcs.rochester.edu for registration instructions.

Offered: Fall

**BCS 240P BASIC NEUROBIOLOGY LAB**

This laboratory is required for all Neuroscience majors. Section assignments are made immediately following registration, NOT at the start of the semester. Contact the Undergraduate Coordinator at ugcoord@bcs.rochester.edu for a section assignment. Students in other majors are not required to take this lab; they will be allowed to register only if space permits.

Offered: Fall

**BCS 242 NEUROPSYCHOLOGY**

Examines clinical neuropsychology, which bridges neurology, neuroscience, and clinical psychology. Covers history of clinical neuropsychology, principles of neuropsychological assessment, and the interpretation of cognition and behavior as they relate to brain dysfunction. Considers specific neurological syndromes including neurodegenerative, cerebrovascular, toxic, and memory disorders; epilepsy; head trauma; infectious processes; pediatric neuropsychology; psychiatric syndromes; and forensic neuropsychology. Patient presentations (videotape and in-person interviews) supplement lectures.

Offered: Fall

**BCS 243 NEUROCHEMICAL FOUNDATIONS OF BEHAVIOR**

Introduces the field of neurochemistry with an emphasis on cellular and molecular neurochemistry. Topics range from study of neurochemical mechanisms that underlie normal neural function to discussion of behavioral disturbances that result from neurochemical abnormalities. Considers neurochemical mechanisms of adaptive behavior, learning and memory, behavioral disorders, gender differences, and drug seeking behavior.

Offered: Fall

**BCS 244 NEUROETHOLOGY**

Explores the neural basis of naturally occurring animal behaviors. Emphasizes how information is integrated from interactions between molecules, cells, and groups of cells, all of which are necessary to produce behavior. Considers how hormones, neural development, anatomy, physiology, and evolution lead to behaviors such as orientation, communication, feeding, and reproduction.

Offered: Spring

**BCS 245 SENSORY & MOTOR NEUROSCIENCE**

Focuses on how single neurons and populations of neurons represent sensory information, how sensory signals are transformed and decoded to mediate perception, and how perceptual signals are converted into neural commands to initiate actions. Explores how simple behaviors (such as detection and discrimination) can be quantified and explained in terms of neural activity. Introduces students to quantitative approaches for linking neural activity to perception and decision-making. Emphasizes studies of the visual, oculomotor, and somatosensory systems, with some attention to the auditory and vestibular systems as well.

Offered: Spring

**BCS 246 BIOLOGY OF MENTAL DISORDERS**

Examines the neurobiology of anxiety/phobic conditions, mood disorders, and chronic psychotic states, particularly schizophrenia. Considers definitions of psychiatric syndromes, the problems of diagnosis, brain organization, and neurotransmitter systems involved in state functions. Introduces research approaches including epidemiologic, phenomenologic, family/adoption, longitudinal descriptive, psychophysiological, neuropharmacologic, genetic linkage, and postmortem studies; emphasizes recent in vivo brain imaging and neuroreceptor studies.

Offered: Spring

**BCS 247 TOPICS IN COMPUTATIONAL NEUROSCIENCE**

This course will provide an introduction to computational neuroscience, the study of both the computations performed by the brain, and of computational models of neuronal responses. In the course we will focus on the visual system.
Offered: Spring

**BCS 248 NEUROECONOMICS**
We will discuss the neuroscience and psychology underlying reward-based decisions. Topics of discussion will include behavioral economics, neuroimaging studies of consumer behavior, physiological studies of the reward system, and computational models of choice and reinforcement learning. Students will be expected to read several scholarly articles each week, attend lectures, and participate in discussions.

Offered: Fall

**BCS 249 DEVELOPMENTAL NEUROBIOLOGY**
Advanced treatment of the development of the nervous system, including the nature/nurture issue and factors that influence the development of neural organization and function. Topics include the production, migration, differentiation and survival of neurons; functional specialization of neural regions; axonal navigation; target mapping. Compares and contrasts developmental plasticity with forms of neural plasticity exhibited in adults.

Offered: Spring

**BCS 259 LANGUAGE DEVELOPMENT**
Introduces children's language development, including the acquisition of phonology, syntax, and semantics. Focuses on the acquisition of a first language by young children, comparing the acquisition of a variety of spoken and signed languages to find possible universal principles of language learning.

Offered: Spring

**BCS 260 MUSIC & THE MIND**
Introduction to the discipline of music cognition. Topics include empirical methods, psycho-acoustic principles, influence of Gestalt psychology, music and language, metric and tonal hierarchies, music and the brain, aspects of musical development, and research on musical memory, expectation, and emotion.

Offered: Fall

**BCS 261 LANGUAGE USE & UNDERSTANDING**
Explores the cognitive mechanisms used to speak and understand language, with a special focus on contextually situated language use. Studies the moment-by-moment processes underlying language production and comprehension, including how speakers choose words and phrases and how listeners understand them.

Offered: Spring

**BCS 264 SIGNED LANGUAGE STRUCTURE**
Examines signed languages and the cognitive constraints that shape them, through a detailed consideration of the structure of American Sign Language and other natural signed languages of the world. Includes training in sign language notation and analysis. Knowledge of sign language is required.

Offered: Spring

**BCS 265 LANGUAGE & THE BRAIN**
Examines how the comprehension and production of language is implemented in the human brain. Uses evidence from neuropsychological and brain imaging studies to consider the following questions: What is the network of brain areas that subserves language processing? What are the specific functions of these areas? What happens when these brain areas are damaged? What is the timing of brain activity in these areas during language processing? Finally, how do the brain areas involved in language processing overlap with those involved in other complex cognitive processes?

Offered: Spring

**BCS 310 SENIOR SEMINAR**
A 2-credit-hour course required of all senior BCS majors who do not enter the honors program. Emphasizes reading, evaluating, and discussing primary research papers. Each student chooses a topic, becomes familiar with it, selects a classic paper, leads a class discussion, and writes an evaluation of the paper as though providing peer review for a journal.
Offered: Fall Spring

**BCS 311 HONORS SEMINAR**  
A 2-credit course required of seniors in the BCS Honors program. Students choose a classic paper for the class to read, lead a discussion of it, and give a formal oral and written presentation of their honors theses. To be taken in the semester the honors thesis is completed. See BCS 310 and refer to the Undergraduate Programs Coordinator in the Dept. of Brain & Cognitive Sciences for more information.

Offered: Spring

**BCS 390 SUPERVISED TEACHING**

**BCS 391 INDEPENDENT STUDY**

**BCS 391W INDEPENDENT STUDY**

**BCS 392 PRACTICUM**

**BCS 395 INDEPENDENT RESEARCH**

**BCS 396 HONORS RESEARCH IN BCS**

**BCS 491 MASTER'S READINGS**

**BCS 493 MASTER'S SPECIAL TOPICS**

**BCS 501 LANGUAGE**

**BCS 502 COGNITION**

**BCS 504 SENSORY SYSTEMS**

**BCS 505 PERCEPTION & MOTOR SYSTEMS**

**BCS 507 BASIC NEUROBIOLOGY**

**BCS 507P BASIC NEUROBIOLOGY LAB**

**BCS 508 COGNITIVE NEUROSCIENCE**

**BCS 510 DATA ANALYSIS I**

**BCS 511 BEHAVIORAL METHODS IN COGNITIVE SCIENCE**

**BCS 512 COMPUTATIONAL METHODS IN COGNITIVE SCIENCE**

**BCS 513 INTRO TO fMRI: IMAGING, COMPUTATIONAL ANALYSIS, & NEURAL REPRESENTATIONS**  
The core focus of the course will be on how fMRI can be used to ask questions about neural representations and cognitive and perceptual information processing. Some of the questions that the course will address include: 1) The basic fMRI signal just shows activation in different parts of the brain. How can we get from that to addressing questions about neural representations and neural information processing? 2) Ways of relating neural activation to behavioural performance. Can fMRI provide information over and above what can be obtained from behaviour alone? 3) Standard fMRI analysis using the General Linear Model, including preprocessing steps. 4) Multivariate fMRI analysis using machine learning approaches. There will also be a component, about 20% of the class, on the big-picture aspects of MRI physics and physiology which make fMRI possible.
We will discuss the neuroscience and psychology underlying reward-based decisions. Topics of discussion will include behavioral economics, neuroimaging studies of consumer behavior, physiological studies of the reward system, and computational models of choice and reinforcement learning. Students will be expected to read several scholarly articles each week, attend lectures, and participate in discussions.
BCS 598 SUPERVISED TEACHING ASSISTANT

BCS 599 PROFESSIONAL DEVELOPMENT & CAREER PLANNING

BCS 895 CONT OF MASTER'S ENROLLMENT

BCS 899 MASTER'S DISSERTATION

BCS 985 LEAVE OF ABSENCE

BCS 986V FULL TIME VISITING STUDENT

BCS 995 CONT OF DOCTORAL ENROLLMENT

BCS 997 DOCTORAL DISSERTATION

BCS 997A DOCTORAL DISSERTATION IN ABSENTIA

BCS 999 DOCTORAL DISSERTATION

BCS 999A DOCTORAL DISSERTATION IN ABSENTIA

BCS 999B PHD IN-ABSENTIA ABROAD

BIO 101 GENES, GERMS, & GENOMICS
An introduction to selected principles of the biological sciences, explored through current topics in biology. Areas of study include the organization of life, the scientific method, and understanding data. Biological and biomedical topics of contemporary interest to be discussed may include, but are not limited to, cancer, aging, stem cells, genetic engineering, genetic counseling, the genetic and molecular basis of human disease, precision medicine and personal genomics, and the human microbiome.
Offered: Fall

BIO 102 NATURAL HISTORY
Introduction to identification and observation of plants and animals in their environment, focusing on common species and major ecological communities in the Rochester vicinity.
Offered: Fall

BIO 103 NATURAL HISTORY RESEARCH
Participation in a research project on local plants or animals, for non-science majors who have taken BIO 102 and need two additional credits for a cluster.
Offered: Fall

BIO 104K ECOSYSTEM CONSERVATION & HUMAN SOCIETY
A new approach in conservation biology. Identifies, places economic value on natural ecosystems (clean water and air, waste decomposition, pollination and farm land productivity). Other approaches in conservation, review of services ecosystems provide, ways the value of services are determined, and influencing economic and political policy.
Offered: Fall

BIO 105 INTRODUCTORY BIOLOGY LABORATORY
Companion for the lecture course, Principles of Biology I. Protein and nucleic acid structure, enzyme activity, cell and tissue structure, and cell reproduction. Emphasizes experimental design and data analysis.
Offered: Fall
**BIO 107** ETHICS & SCIENCE OF STEM CELLS

**BIO 109** DARWIN & DARWINISM

**BIO 110** PRINCIPLES OF BIOLOGY I

First semester in a course sequence for all biology majors. The course will provide an introduction to biochemistry, cell biology, molecular biology, and animal physiology. Emphasis will be placed on quantitative learning and data analysis; weekly workshops will emphasize the construction and interpretation of graphs.

Offered: Fall Spring Summer

**BIO 111** PRINCIPLES OF BIOLOGY II


Offered: Spring Summer

**BIO 111P** INTRODUCTORY BIOLOGY LAB

Accompanies the lecture course Principles of Biology II. Plant and animal diversity, biology of protista, animal behavior, bioinformatics, and physiology. Problem solving, critical thinking and experimental design.

Offered: Spring Summer

**BIO 112** PERSPECTIVES IN BIOLOGY I

First semester of a two-course introductory sequence. Biochemistry, molecular and cellular evolution, cell reproduction, fundamentals of genetics and molecular biology. Emphasis on chemistry underlying biological processes, experimental approaches, data analysis, and quantitative methods.

Offered: Fall

**BIO 113** PERSPECTIVES IN BIOLOGY II

Second semester of a two-course introductory. Evolution, organismal diversity, ecology, and functional biology. Emphasis on experimental approaches, data analysis, quantitative methods, and reading original papers. Open only to freshmen.

Offered: Spring

**BIO 113P** PERSPECTIVES IN BIOLOGY LAB

Accompaniies the lecture course Perspectives in Biology II. Includes biological diversity, ecology, evolution, animal behavior, physiology and bioinformatics. Emphasis is placed on problem solving, critical thinking and experimental design.

Offered: Spring

**BIO 115** INTRO TO EVLTNRY BIOLOGY

**BIO 151** INTRODUCTION TO BIOCHEMISTRY LAB

Complements Biochemistry lecture. Experimental design and data analysis using enzyme assays, electrophoretic gels, antibodies, and light microscopy.

Offered: Spring

**BIO 190** GENETICS & THE HUMAN GENOME

Basics of Mendelian and molecular genetics with a focus on the structure, function and evolution of the human genome.

Offered: Fall

**BIO 198** PRINCIPLES OF GENETICS

The course covers the basics of Mendelian and molecular genetics with a focus on genetic approaches to scientific questions and the molecular biology of the “Central Dogma”. Recommended for most Biology majors. The optional companion lab for this course is BIO 198P. A student cannot receive credit of both BIO 190 and BIO 198.
Offered: Fall Summer

**BIO 198P PRINCIPLES OF GENETICS LAB**
Introduction to basic genetic theory and laboratory practices. Classical inheritance in eukaryotes, bacterial genetics and molecular technology techniques. Emphasis is on data analysis and experimental design.
Offered: Fall Summer

**BIO 201 LECTURES IN PHYSIOLOGY**
Function of various mammalian systems with special emphasis on humans. Topics include: excitable tissue, respiration, nutrition, reproduction, endocrinology, skeletal, circulatory and renal systems; homeostatic mechanism. Laboratory exercises will not be conducted.
Offered: Fall

**BIO 202 MOLECULAR BIOLOGY**
Molecular mechanisms of gene replication, gene expression, and the control of gene expression in both prokaryotic and eukaryotic cells. Topics include: enzymatic mechanisms of DNA replication, recombination and repair; transposable elements; DNA transcription; RNA splicing; RNA translation; repressors, activators and attenuators; recombinant DNA and genetic engineering.
Offered: Fall

**BIO 202W MOLECULAR BIOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 202
Offered: Fall

**BIO 204 MAMMALIAN PHYSIOLOGY**
Normal function with an emphasis on humans. Topics include homeostatic regulation, various systems (endocrine, nervous, muscular, cardiovascular, respiratory, renal, digestive, and metabolic), and integration of function of those systems.
Offered: Fall

**BIO 204P MAMMALIAN PHYSIOLOGY LAB**
Offered: Fall

**BIO 204W MAMMALIAN PHYSIOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 204
Offered: Spring

**BIO 205 EVOLUTION**
Broad survey of evolutionary biology. History of evolutionary thought; mathematical theory of population and quantitative genetics; phylogenetics and molecular evolution; origin and history of life; sexual selection; cooperation and conflict; speciation; human evolution. Theory- and concept-oriented; not a survey of organismal diversity.
Offered: Fall

**BIO 205W EVOLUTION WRITING**

**BIO 206 EUKARYOTIC GENOMES**
A course that discusses the remarkable diversity of eukaryotic genomes with an emphasis on the human genome. The course will emphasize the importance of understanding the forces of evolution to explain molecular and genetic topics such as the large variation in genome size and structure as well as the remarkable complexity of gene regulation.
Offered: Spring

**BIO 206W EUKARYOTIC GENOMES WRITING**
Optional Upper-Level Writing Course for BIO 206
Offered: Spring

**BIO 210 CELL BIOLOGY**
An intermediate level course that covers fundamental cell processes at the molecular level. Topics include organelle structure and functions, membrane biogenesis, cytoskeleton, cell signaling, cell cycle growth and death.
Offered: Fall

**BIO 210W CELL BIOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 210
Offered: Fall

**BIO 214 BIOSTATISTICS**
Descriptive statistics, graphics, estimation, elementary probability theory, distributions, hypothesis testing, goodness of fit tests, experimental design, correlation, analysis of variance, regression and likelihood. Optional recitations familiarize student with R.
Offered: Spring

**BIO 214W BIOSTATISTICS WRITING**
Optional Upper-Level Writing Course for BIO 214
Offered: Spring

**BIO 215 MOLECULAR BIOLOGY OF CELL SIGNALING**

**BIO 215W MOLECULAR BIOLOGY OF CELL SIGNALING WRITING**

**BIO 217 MAMMALIAN ANATOMY**
Structures of the body with an emphasis on humans. Topics include the integumentary, skeletal, muscular, endocrine, nervous, cardiovascular, respiratory, renal, digestive, and reproductive systems. Students must register for lab (BIO217P).
Offered: Spring

**BIO 217P MAMMALIAN ANATOMY LAB**
Offered: Spring

**BIO 217W MAMMALIAN ANATOMY WRITING**
Offered: Spring

**BIO 220 ADVANCED CELL BIOLOGY**
Mechanistic understanding of cellular organization and function. Topics include cytoskeleton, membrane traffic, cell signaling, cell cycle. Primary research literature, classic and recent. Design and interpretation of experiments, drawn from biochemistry, microscopy and genetics. Oral presentations, written assignments, and classroom discussions.
Offered: Fall

**BIO 220W ADVANCED CELL BIOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 220
Offered: Fall

**BIO 222 BIOLOGY OF AGING**
Emphasizing molecular mechanisms of aging. Will discuss popular theories of aging, model organisms used in aging research, evolution of aging, relation between aging and cancer, human progeroid syndromes, and interventions to slow aging.
Offered: Fall
BIO 222W BIOLOGY OF AGING WRITING
Optional Upper-Level Writing Course for BIO 222
Offered: Fall

BIO 225 ECOLOGY & EVOLUTIONARY BIOLOGY LAB
Development of testable questions and implementation of appropriate observations and experiments on a series of topics in ecology and evolution. Many mini-studies will be done in the field on non-model organisms native to New York. Experience on field and lab methods used in ecology and evolutionary biology, critiquing published scientific studies, writing scientific reports, and presentation of scientific results.
Offered: Fall

BIO 225W ECOLOGY & EVOLUTIONARY BIOLOGY LAB WRITING
Optional Upper-Level Writing Course for BIO 225
Offered: Fall

BIO 226 DEVELOPMENTAL BIOLOGY
Cellular and molecular aspects of animal development, with emphasis on processes and underlying mechanisms. Topics include embryonic cleavage, gastrulation, early development of model vertebrates and invertebrates, patterning of cell fates along embryonic axes of Drosophila and vertebrates, organogenesis and stem cells.
Offered: Fall

BIO 226W DEVELOPMENTAL BIOLOGY WRITING
Optional Upper-Level Writing Course for BIO 226
Offered: Fall

BIO 243 EUKARYOTIC GENE REGULATION
This advanced course examines mechanisms of chromatin-mediated regulation of gene expression, relating molecular structures, dynamic interactions, nuclear processes, 3-D nuclear organization to biological functions. Lectures and readings draw heavily on primary literature both classic and most recent.
Offered: Spring

BIO 243W EUKARYOTIC GENE REGULATION WRITING
Optional Upper-Level Writing Course for BIO 243
Offered: Spring

BIO 247 ENVIRONMENTAL ANIMAL PHYSIOLOGY
Understanding animal function by examining how animals cope with environmental challenges, e.g., cellular and physiological adaptations to extremes of temperature, salinity, and altitude.
Offered: Spring

BIO 247W ENVIRONMENTAL ANIMAL PHYSIOLOGY WRITING
Optional Upper-Level Writing Course for BIO 247
Offered: Spring

BIO 250 INTRODUCTION TO BIOCHEMISTRY
Fundamental aspects of biochemistry, including biomolecular structure and catalysis, bioenergetics, protein folding, kinetic analysis of enzyme action and general intermediary metabolism.
Offered: Spring

BIO 250H INTRO TO BIOCHEMISTRY - HONORS
This course is no longer offered. See BIO 252.
Offered: Spring

**BIO 252 PRINCIPLES OF BIOCHEMISTRY**

**BIO 253 COMPUTATIONAL BIOLOGY**
An introduction to the history, theory, and practice of using computers to conduct biological research. Topics include the fundamentals of Linux-based computing and perl programming, accessing and storing biological data, alignment of molecular sequences, and computer-based analysis of data.
Offered: Spring

**BIO 253W COMPUTATIONAL BIOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 253
Offered: Spring

**BIO 258 HUMAN ANATOMY**
Human Anatomy is the detailed study of the human organism at the cellular, tissue and organ systems levels. The relationship between structure and function is covered with emphasis on structural relationships. The course includes both lectures and laboratory sessions, an provides a basis for further professional and clinical experience.

**BIO 260 ANIMAL BEHAVIOR**
Examines animal behavior from an ecological and evolutionary perspective. Topics include social organization, mating systems, foraging, aggression, and animal learning. Students also learn quantitative techniques in behavioral biology.
Offered: Fall

**BIO 260W ANIMAL BEHAVIOR WRITING**
Optional Upper-Level Writing Course for BIO 260
Offered: Fall

**BIO 261W GENETIC RESEARCH A**
Hands on experience in conducting animal behavior research, with a focus on the genetics of behavior using Nasonia vitripennis. Behaviors investigated include mate preference, host acceptance, courtship, dispersal, activity level, territoriality, aggression, and flight. Develop methods of quantitative behavioral observation, genetic crossing, data analysis, polymerase chain reaction (PCR), animal husbandry, research record keeping, basic bioinformatics, and research presentation.
Offered: Fall

**BIO 262W GENETIC RESEARCH B**
Hands on experience in conducting genetic research, with a focus on the genetics of complex traits such as behavior, development, morphology and/or physiology. Genetics of complex traits is an exciting and rapidly growing field.

**BIO 263 ECOLOGY**
A survey of adaptations to the physical environment, dynamics of natural populations, interactions between species, and ecosystem function.
Offered: Fall

**BIO 263W ECOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 263
Offered: Fall

**BIO 265 MOLECULAR EVOLUTION**
Evolution at the molecular level. Basic evolutionary principles to infer history from DNA sequences; determine what forces have shaped the evolution of genes and genomes; understand the relationship between molecular evolution and phenotypic evolution; and address applied problems, like assigning biological function to genome sequences, finding the sources of epidemics, and finding the genes involved in human disease.

Offered: Spring

**BIO 265W MOLECULAR EVOLUTION WRITING**
Optional Upper-Level Writing Course for BIO 265
Offered: Spring

**BIO 266 TREE OF LIFE**
Survey of life's diversity with an emphasis on understanding phylogenetic relationships and patterns of biological diversity over time and among groups. Computational methods for reconstructing phylogenetic trees and the application of resulting trees to addressing major questions in ecology and evolutionary biology.

Offered: Spring

**BIO 266W TREE OF LIFE WRITING**

**BIO 268 LABORATORY IN MOLECULAR, CELL AND DEVELOPMENTAL BIOLOGY**
This course is designed to provide (1) introduction to model organisms (2) training in specific methods used in molecular, cell and developmental biology research, with emphasis on data acquisition and analysis (3) experience in the design and execution of experiments, reading and writing scientific reports, and public scientific presentation.

Offered: Spring

**BIO 268W LABORATORY IN MOLECULAR, CELL AND DEVELOPMENTAL BIOLOGY WRITING**
Optional Upper-Level Writing Course for BIO 268
Offered: Spring

**BIO 270W WRITING IN ECOLOGY & EVOLUTION**
Students will research, write, and extensively revise a literature-based review paper on a topic in Ecology and Evolutionary Biology. Intended for junior and senior BEB majors; open to other Biology majors with permission of instructor.

Offered: Spring

**BIO 272W DEVELOPING A PROFESSIONAL BIOLOGY WRITING PORTFOLIO**
Writing in a way that describes science to non-scientists. Short writing assignments that tailor information about a single topic to different audiences. Identify the area(s) to concentrate efforts, and write and revise significant piece of scientific writing. Writing, revising, self-assessment, and peer-review.

Offered: Spring

**BIO 275W WRITING BIOLOGICAL REVIEWS**
In this course, you will write a review article about a new and exciting topic in biology. Through multiple writing and speaking exercises, you will learn how to define scientific questions, review the relevant evidence, and tailor your writing and speaking to effectively communicate with different biology audiences.

Offered: Fall

**BIO 390 SUPERVISED TEACHING**
Credit-based teaching assistant experience.

Offered: Fall Spring

**BIO 390W SUPERVISED TEACHING WRITING**
Offered: Fall Spring
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**BIO 402 MOLECULAR BIOLOGY**

This course deals with the molecular mechanisms of gene replication, gene expression, and the control of gene expression in both prokaryotic and eukaryotic cells. Topics include enzymatic mechanisms of DNA replication, recombination and repair; transposable elements; DNA transcription; RNA splicing; RNA translation; repressors, activators, and attenuators; recombinant DNA and genetic engineering.

Offered: Fall

**BIO 405 EVOLUTION**

Fundamentals of Evolution. Topics include the history of evolutionary thought, population and quantitative genetics, molecular evolution, the history of life, speciation, and human evolution.

Offered: Spring

**BIO 406 EUKARYOTIC GENOMES**

**BIO 415 MOLECULAR BIOLOGY OF CELL SIGNALING**

This course is no longer offered by the Department of Biology.

**BIO 420 ADVANCED CELL BIOLOGY**

An advanced course focusing on a mechanistic understanding of cellular organization and function. This course relies heavily on the primary research literature, classic and recent, and the design and interpretation of experiments, drawn from biochemistry, microscopy and genetics. Topics include the cytoskeleton, membrane traffic, cell-cell signaling and the cell cycle. Oral and written student presentations and active participation in classroom discussions are essential features of the course.

Offered: Fall

**BIO 422 BIOLOGY OF AGING**
This course focuses on molecular mechanisms of aging. We will discuss popular theories of aging, model organisms used in aging research, evolution of aging, relation between aging and cancer, human progeroid syndromes, and interventions to slow aging.

Offered: Fall

**BIO 426 DEVELOPMENTAL BIOLOGY**
This course deals with the cellular and molecular aspects of animal development, with emphasis on processes and underlying mechanisms. Topics include: embryonic cleavage, gastrulation, early development of model vertebrates and invertebrates, patterning of cell fates along embryonic axes of Drosophila and vertebrates, organogenesis, and stem cells.

Offered: Fall

**BIO 443 EUKARYOTIC GENE REGULATION**
This advanced course examines mechanisms of chromatin-mediated regulation of gene expression, relating molecular structures, dynamic interactions, nuclear processes, 3-D nuclear organization to biological functions. Lectures and readings draw heavily on primary literature both classic and most recent.

Offered: Spring

**BIO 453 COMPUTATIONAL BIOLOGY**
An introduction to the history, theory, and practice of using computers to conduct biological research. Topics include the fundamentals of Linux-based computing and perl programming, accessing and storing biological data, alignment of molecular sequences, and computer-based analysis of data.

Offered: Spring

**BIO 458 HUMAN ANATOMY**

**BIO 460 ANIMAL BEHAVIOR**
Examines animal behavior from an ecological and evolutionary perspective. Topics include social organization, mating systems, foraging, animal learning, and aggression. Students learn quantitative techniques in behavioral biology.

Offered: Fall

**BIO 463 ECOLOGY**
A survey of adaptations to the physical environment, dynamics of natural populations, interactions between species, and human impacts on the environment.

Offered: Fall

**BIO 465 MOLECULAR EVOLUTION**
This course explores evolution at the molecular level. We use evolutionary principles to infer history from DNA sequences, to determine what forces have shaped the evolution of genes and genomes, to understand the relationship between molecular evolution and phenotypic evolution, and to address applied problems, like assigning biological function to genome sequences, finding the sources of epidemics, and finding the genes involved in human diseases.

Offered: Spring

**BIO 466 TREE OF LIFE**
This course is no longer offered by the Department of Biology.

**BIO 468 LABORATORY IN MOLECULAR, CELL AND DEVELOPMENTAL BIOLOGY**
This course is designed to provide (1) introduction to model organisms (2) training in specific methods used in molecular, cell and developmental biology research, with emphasis on data acquisition and analysis (3) experience in the design and execution of experiments, reading and writing scientific reports, and public scientific presentation.

Offered: Spring

**BIO 471 ADVANCED ECOLOGY AND EVOLUTIONARY BIOLOGY A**
A four-course sequence that provides comprehensive coverage of advanced topics in ecology and evolutionary biology. Areas covered include: population and community ecology; population and quantitative genetics; molecular evolution; evolutionary genomics; evo-devo; phylogenetics; and speciation. This course is intended for graduate students; exceptional undergraduate students can enroll by permission of the course coordinator.

Offered: Fall

**BIO 472 ADVANCED ECOLOGY AND EVOLUTIONARY BIOLOGY B**

A four-course sequence that provides comprehensive coverage of advanced topics in ecology and evolutionary biology. Areas covered include: population and community ecology; population and quantitative genetics; molecular evolution; evolutionary genomics; evo-devo; phylogenetics; and speciation. This course is intended for graduate students; exceptional undergraduate students can enroll by permission of the course coordinator.

Offered: Spring

**BIO 473 ADVANCED ECOLOGY AND EVOLUTIONARY BIOLOGY C**

A four-course sequence that provides comprehensive coverage of advanced topics in ecology and evolutionary biology. Areas covered include: population and community ecology; population and quantitative genetics; molecular evolution; evolutionary genomics; evo-devo; phylogenetics; and speciation. This course is intended for graduate students; exceptional undergraduate students can enroll by permission of the course coordinator.

Offered: Fall

**BIO 474 ADVANCED ECOLOGY AND EVOLUTIONARY BIOLOGY D**

A four-course sequence that provides comprehensive coverage of advanced topics in ecology and evolutionary biology. Areas covered include: population and community ecology; population and quantitative genetics; molecular evolution; evolutionary genomics; evo-devo; phylogenetics; and speciation. This course is intended for graduate students; exceptional undergraduate students can enroll by permission of the course coordinator.

Offered: Spring

**BIO 480 GRADUATE LAB ROTATION**

An introduction to research in the laboratories of individual faculty members.

Offered: Fall Spring

**BIO 491 MASTER'S READINGS IN BIOLOGY**

Offered: Fall Spring

**BIO 495 MASTER'S RESEARCH IN BIOLOGY**

Offered: Fall Spring

**BIO 516 CELL/DEV/MOL BIOLOGY SEM**

This one credit course examines current topics in cell, developmental and molecular biology. Student-led seminars and discussions based on representative publications in the recent literature. One or several broad topics, drawn from active fields of cell, developmental and molecular biology, will be covered each semester.

Offered: Fall

**BIO 517 GRADUATE RESEARCH SEMINAR**

Ph.D. students prepare and present their research findings to the Department. This course carries one credit.

Offered: Spring

**BIO 580 JOURNAL CLUB IN ECOLOGY & EVOLUTION**

Current topics in ecology and evolutionary biology are explored by reading research and review papers. Students choose topics for reading and lead discussions of their chosen topics. This course carries one credit.

Offered: Fall Spring
**BIO 581 TOPICS IN CELL, DEV & MOL BIOL**
This two-credit course will be taught by all faculty members of the Biology Department that conduct research in the areas of Cellular, Developmental and Molecular Biology. Each week one faculty will provide a general introduction to his/her field of interest and a comprehensive overview of their own research efforts. Short (1-2 page) papers will be assigned throughout the course, critiqued and returned for rewriting. Grades will be determined by participation in class discussions and the assigned writings.
Offered: Fall

**BIO 584 SEMINAR IN EVOLUTION**
Biology Colloquium. Members of the staff and advanced students in the biological sciences meet on regularly announced dates for presentation and discussion of research by members of the department or invited guests. These seminars are open to all.
Offered: Fall Spring

**BIO 590 BIOLOGY TEACHING**

**BIO 591 PHD READINGS IN BIOLOGY**
Offered: Fall Spring

**BIO 593 CLASSICS IN EVOLUTION**

**BIO 594 RESEARCH INTERNSHIP**

**BIO 595 PHD RESEARCH IN BIOLOGY**
Offered: Fall Spring

**BIO 595A PHD RESEARCH IN ABSENTIA**
Offered: Fall Spring

**BIO 595B BIORSRCH IN ABSENTIA ABROAD**

**BIO 890 SUMMER IN RESIDENCE - MA**

**BIO 895 CONTINUATION OF MASTERS ENROLLMENT**
Offered: Fall Spring

**BIO 897 MASTERS DISSERTATION**
Offered: Fall Spring

**BIO 899 MASTER'S DISSERTATION**
Offered: Fall Spring

**BIO 985 LEAVE OF ABSENCE**
Offered: Fall Spring

**BIO 986V FULL TIME VISITING STUDENT**

**BIO 987V PART-TIME VISITING STUDENT**

**BIO 990 SUMMER IN RESIDENCE**

**BIO 995 CONTINUATION OF DOCTORAL ENROLLMENT**
Offered: Fall Spring
BIO 997 DOCTORAL DISSERTATION
Offered: Fall Spring

BIO 997A DOCTORAL DISSERTATION IN ABSENTIA
Offered: Fall Spring

BIO 999 DOCTORAL DISSERTATION
Offered: Fall Spring

BIO 999A DOCTORAL DISSERTATION IN ABSENTIA
Offered: Fall Spring

BIO 999B PHD IN-ABSENTIA ABROAD

BME 099 BIOMATL’S & COMPUTATION LAB
Shared lab course for BME221 and BME245.
Offered: Spring

BME 101 INTRODUCTION TO BIOMEDICAL ENGINEERING
An introductory overview of the multi-disciplinary field of biomedical engineering. Application of elementary engineering principles to the analyses of physiological systems. Course topics include biomechanics, cell and tissue engineering, biosignals, biosystems, bioinstrumentation, medical imaging, medical optics, and bioethics. Includes weekly laboratory and introduction to the use of computers as tools for solving engineering problems.
Offered: Fall

BME 201 FUNDAMENTALS OF BIOMECHANICS
Teaches elementary mechanical equilibrium and motion with extended applications to biology. Lectures present a traditional analysis of idealized particles and rigid bodies. Topics include force and moment balances, frames, trusses and pulleys, systems with friction, mass centers, area moments, and the linear and rotational kinetics and kinematics of rigid bodies. Weekly exercises apply fundamental principles to non-biological problems in two and three dimensions. Weekly problems extend the application to biological problems ranging from human motion to the mechanics of cells. In an end-of-term project students analyze human motion using the MATLAB programming language. This is a required course for BME majors typically taken in the sophomore year. 4 credits. Prerequisites: MTH 161 and 162, BME 101 and PHY 121.
Offered: Fall

BME 201P MATLAB for Biomedical Engineering
Fundamentals of computer programming in MATLAB. Emphasis on programming basics, such as syntax, loop structures, logic, input/output, and graphics.
Offered: Fall

BME 210 BIOSYSTEMS & CIRCUITS
Introduction to electrical circuit theory. Examples will include bioelectric systems and signals and models of biological systems.
Offered: Spring

BME 212 VISCO IN BIO TISSUES
Viscoelastic materials have the capacity to both store and dissipate energy. As a result, properly describing their mechanical behavior lies outside the scope of both solid mechanics and fluid mechanics. This course will develop constitutive relations and strategies for solving boundary value problems in linear viscoelastic materials. In addition, the closely-related biphasic theory for fluid-filled porous solids will be introduced. An emphasis will be placed on applications to cartilage, tendon, ligament, muscle, blood vessels, and other biological tissues. Advanced topics including non-linear viscoelasticity, composite viscoelasticity and physical mechanisms of viscoelasticity will be surveyed.
BME 218 INTRODUCTION TO NEUROENGINEERING
Offered: Fall

BME 221 BIOMEDICAL COMPUTATION & STATISTICS
The application of numerical and statistical methods to model biological systems and interpret biological data, using the MATLAB programming language.
Offered: Spring

BME 228 PHYSIOLOGICAL CONTROL SYSTEMS
This course introduces students to the theory and practice of control systems engineering. Topics include frequency domain modeling, time domain stability, transient and steady-state error analysis, root locus and frequency response techniques and feedback system design. Emphasis is placed on analyzing physiological control systems, but the concepts and design techniques are applicable and applied to a wide variety of other systems including mechanical and electrical systems. Graduate students will have more homework problems and additional exam problems.
Offered: Spring

BME 230 BME SIGNALS, SYSTEMS AND IMAGING
Introduction to continuous and discrete time signals and linear time invariant systems, with applications to BME including imaging. Topics include convolution, Laplace and Z transforms, stability of systems, the Fourier series and transform, noise and filtering, and fundamental concepts in image processing and enhancement. Weekly homework assignments are supplemented with labs every other week. Two Midterms and a comprehensive final exam.
Offered: Fall

BME 245 BIOMATERIALS
This course provides a background in biomaterials: basic material properties, specifics on ceramics, polymers and metals used in the body, and special topics related to biomaterials including tissue engineering, biological responses to implanted materials, and drug delivery. 4 credits
Offered: Spring

BME 251 BIOMEDICAL ULTRASOUND
The course presents the physical basis for the use of high-frequency sound in medicine. Topics include acoustic properties of tissue, sound propagation (both linear and nonlinear) in tissues, interaction of ultrasound with gas bodies (acoustic cavitation and contrast agents), thermal and non-thermal biological effects of ultrasound, ultrasonography, dosimetry, hyperthermia and lithotripsy.
Offered: Spring

BME 253 ULTRASOUND IMAGING
This course investigates the imaging techniques applied in state-of-the-art ultrasound imaging and their theoretical bases. Topics include linear acoustic systems, spatial impulse responses, the k-space formulation, methods of acoustic field calculation, dynamic focusing and apodization, scattering, the statistics of acoustic speckle, speckle correlation, compounding techniques, phase aberration correction, velocity estimation, and flow imaging. A strong emphasis is placed on readings of original sources and student assignments and projects based on realistic acoustic simulations.
Offered: Fall

BME 255 TRANSLATIONAL BIOMEDICAL OPT
This course provides considerations in designing optical instrument suitable for clinical translation, theory behind the light propagation in biological tissues, and data analysis and interpretation skills. In particular, fundamental theory behind the diffuse optical spectroscopy and tomography, diffuse correlation spectroscopy and photoacoustic tomography will be covered.
BME 258 HUMAN ANATOMY
Human Anatomy is the detailed study of the human organism at the cellular, tissue and organ systems levels. The relationship between structure and function is covered with emphasis on structural relationships. The course includes both lectures and laboratory sessions, and provides a basis for further professional and clinical experience. (Students should not take both BME (or BIO) 258 and BIO 203.)
Offered: Spring

BME 259 TRANSPORT PHENOMENA IN BIOLOGICAL SYSTEMS
This course will provide an overview of transport phenomena in biological systems that are critical to the function of all living organisms. The fundamental laws and equations of transport phenomena will be applied to topics including cellular, cardiovascular, respiratory, liver and kidney transport, blood flow and rheology, and circulation in tissues and arteries. Students will have homework problem sets, mid-term and final exams. In addition, students will give a presentation at the end of the semester based on a topic related to biological transport that they pick based on their interest.
Offered: Fall

BME 260 QUANTITATIVE PHYSIOLOGY
A quantitative, model-oriented approach to physiological systems is presented. Topics include muscle and nerve tissue, the cardiovascular system, the respiratory system, the renal system, and a variety of neural systems
Offered: Fall

BME 262 CELL & TISSUE ENGINEERING
This course teaches the principles of modern cell and tissue engineering with a focus on understanding and manipulating the interactions between cells and their environment. After a brief overview of Cell and Tissue Engineering, the course covers 5 areas of the field. These are: 1) Physiology for Tissue Engineering; 2) Bioreactors and Biomolecule Production; 3) Materials for Tissue Engineering; 4) Cell Cultures and Bioreactors and 5) Drug Delivery and Drug Discovery. Within each of these topics the emphasis is on analytical skills and instructors will assume knowledge of chemistry, mass transfer, fluid mechanics, thermodynamics and physiology consistent with the Cell and Tissue Engineering Track in BME. In a term project, students must present written and oral reports on a developing or existing application of Cell and Tissue Engineering. The reports must address the technology behind the application, the clinical need and any ethical implications.
Offered: Spring

BME 266 BIOPROCESS ENGINEERING
This course will explore the bioprocesses involved in producing a biopharmaceutical product (therapeutic proteins, cell therapy products, and vaccines). The course will take a stepwise journey through a typical production process from the perspective of a Bioprocess Engineer, starting with cell culture and moving downstream through purification and final fill. Engineering concepts involved in bioreactor design and control, cell removal/recovery operations, and protein purification will be examined. The course will also provide an introduction to the analytical methods used to test biopharmaceutical products for critical quality attributes. The role of the regulatory agencies, like the US Food and Drug Administration, and the regulations that govern the industry will be introduced throughout the course in the context of the bioprocess to which they relate. Graduate students will need to complete a semester-end project in order to receive graduate credit for the course.

BME 270 BIOMEDICAL MICROSCOPY
This course covers the principles and practice of light microscopy as applied to biological and medical questions. Topics include basic light microscopy, DIC, phase epifluorescence, confocal and multiphoton laser-scanning microscopy, and selected methods such as CARS, FRET, FRAP, FCS, etc. This course is jointly listed as 470 for graduate students. Some homework problems are “470 only”.
Offered: Fall

BME 274 BIOMEDICAL SENSORS, CIRCUITS & INSTRUMENTATION
Course will cover circuits and sensors used to measure physiological systems at an advanced level. Both signal conditioning and sensor characteristics will be addressed. Topics will include measurement of strain, pressure, flow, temperature, biopotentials, and physical circuit construction. The co-requisite laboratory will focus on the practical implementation of electronic devices for biomedical measurements.
Offered: Spring

**BME 276 BIOMEDICAL OPTICS**
See OPT 276

**BME 283 BIOSOLID MECHANICS**
In this course, we will survey the role of mechanics in cells, tissues, organs and organisms. A particular emphasis will be placed on the mechanics of the musculoskeletal system, the circulatory system and the eye. Engineering concepts will be used to understand how physical forces contribute to biological processes, especially disease and healing. Experimental and modeling techniques for characterizing the complex mechanical response of biosolids will be discussed in detail, and the continuum mechanics approach will highlighted.
Offered: Fall

**BME 295 BME DESIGN SEMINAR**
Introduction to design of medical devices and instruments. Students are introduced to methods and strategies for creative design while considering ethical, economic, regulatory and safety issues. In addition to benchmarking existing devices, students prepare for a design project to be completed in the following semester. 2 credits
Offered: Fall

**BME 296 BME DESIGN PROJECT**
Senior capstone design course in the Biomedical Engineering Program. Students work in teams to design, build, and test a medical device or instrument for a faculty, community or industrial sponsor. Accompanying lectures and discussions introduce issues related to ethics, economics, project management, regulation, safety, and reliability. Students will work in teams to design, build and test a prototype medical device, and document their activities through a variety of reports and presentations
Offered: Spring

**BME 390 SUPERVISED TEACHING**

**BME 391 INDEPENDENT READINGS**

**BME 394 INTERNSHIP**

**BME 395 HONORS SEMINAR**

**BME 395W HONORS SEMINAR**

**BME 396 SPECIAL TOPICS**

**BME 404 COMPUTATIONAL METHODS APPLIED TO BIOSYSTEMS**
The aim of this class is to gain experience solving analytically intractable research problems using computational methods. At the beginning of the course, general numerical analysis topics are reviewed. The rest of the course is oriented toward projects. Examples will be drawn from problems of biological systems.

**BME 411 CELLULAR & MOLECULAR BIO FOUNDATION**
Molecular biology, biochemistry, and genetics that are required to understand the biomedical and broader biological issues that affect our lives.

**BME 412 VISCO IN BIO TISSUES**

**BME 418 INTRO TO NEUROENGINEERING**
Quantitative studies of neural responses at the cellular, circuit, and systems levels. Analytical and computational modeling of neurons, including nonlinear behavior of neurons and neural circuits. Neural coding of information by single cells or neural

Offered: Fall

**BME 420 BIOMEDICAL NANOTECH**

This course is designed to provide students with detailed knowledge of the principles of nanotechnology and their applications in the biomedical field. Topics of study will include synthesis & assembly of nanoscale structures, lithography, and nanobiomaterials. Students will focus on biomedically-relevant topics such as cancer treatment, bone disorder, diabetes; and learn how nanotechnology is helping diagnose, treat, and understand these medical disorders. Recent innovative research in the biomedical field will be highlighted during discussions of the latest journal articles. At the end of the course, students will have an appreciation of the enormous potential of biomedical nanotechnology, its current, and future applications.

Offered: Spring

**BME 428 PHYSIOLOGICAL CONTROL SYSTEMS**

This course introduces students to the theory and practice of control systems engineering. Topics include frequency domain modeling, time domain stability, transient and steady-state error analysis, root locus and frequency response techniques and feedback system design. Emphasis is placed on analyzing physiological control systems, but the concepts and design techniques are applicable and applied to a wide variety of other systems including mechanical and electrical systems. Graduate students will have more homework problems and additional exam problems.

Offered: Spring

**BME 431 PATHWAYS TO MED INNOVATION**

This course will offer students exposure to the intellectual property (IP) and regulatory pathways for new medical innovations. Students will learn the terminology, processes and challenges involved in FDA regulations and the protection of intellectual property for medical innovations. An emphasis will be placed on the ways knowledge of prior art and regulatory barriers can optimize concept selection, and early phase project planning to best identify projects suitable for commercialization. Instruction will include lectures, case studies, guest speakers and integrated assignments that will ask students to explore examples of IP and regulatory challenges, successes and failures. Lectures on regulatory and IP topics will alternate in order to allow students to understand the difficulty presented by balancing these two challenges in the innovation process. Assignments may be tailored to individual students research, design or work concentration areas.

**BME 432 PATHWAY TO MED INNOV PT II**

This interactive course focus on intellectual property (IP) and FDA regulatory pathways for implementation of commercialization of new medical innovations. Emphasis will be placed on the ways that knowledge of IP protection and regulatory barriers can optimize design, testing and commercialization strategies. Building on the basics learned in BME431, students will learn about the processes (and barriers) to bringing a product such as a novel medical device to clinical trials. Instruction will include lectures, case studies, guest speakers and integrated assignments that will ask students to explore examples of IP and regulatory challenges, successes and failures. Lectures on regulatory and IP topics will alternate in order to allow students to understand the difficulty presented by balancing these two challenges in the innovation process. Some assignments may be tailored to individual students research, design or work concentration areas and may be reviewed by course instructors as well as consultants.

**BME 442 Microbiomechanics**

This course covers the application of mechanical principles to biotechnology and to understanding life at its smallest scales. Topics will vary with each course offering. Sample topics include force generation by protein polymerization, the mechanisms of bacterial motion, and the separation of biological molecules in porous media.

Offered: Spring

**BME 445 BIOMATERIALS**

This course provides a background in biomaterials: basic material properties, specifics on ceramics, polymers and metals used in the body, and special topics related to biomaterials including tissue engineering, biological responses to implanted materials, and drug delivery. 4 cr Graduate students will do extra assignments

Offered: Spring

**BME 448 CONTROLLED RELEASE SYSTEMS**
This course will cover the principles, strategies, and materials used in controlled drug delivery systems.

**BME 451 BIOMEDICAL ULTRASOUND**
The physical basis for the use of high-frequency sound in medicine (diagnosis, therapy, and surgery) and biology. Topics include acoustic properties of tissues, sound propagation (both linear and nonlinear) in tissues, interactions of ultrasound with gas bodies (acoustic cavitation and contrast agents), thermal and non-thermal biological effects of ultrasound, ultrasonography, dosimetry, hyperthermia and lithotripsy. Graduate students will have extra assignments.
Offered: Spring

**BME 452 MEDICAL IMAGING: THEORY & IMPLEMENTATION**
Physics and implementation of X-ray, ultrasonic, and MR imaging systems. Special attention is given to the Fourier transform relations and reconstruction algorithms of X-ray and ultrasonic-computed tomography, and MRI.
Offered: Spring

**BME 453 ULTRASOUND IMAGING**
This course investigates the imaging techniques applied in state-of-the-art ultrasound imaging and their theoretical bases. Topics include linear acoustic systems, spatial impulse responses, the k-space formulation, methods of acoustic field calculation, dynamic focusing and apodization, scattering, the statistics of acoustic speckle, speckle correlation, compounding techniques, phase aberration correction, velocity estimation, and flow imaging. A strong emphasis is placed on readings of original sources and student assignments and projects based on realistic acoustic simulations.
Offered: Fall

**BME 455 TRANSLATIONAL BIOMEDICAL OPT**
This course will focus on the macroscopic biomedical optics techniques (e.g. diffuse optical spectroscopy and tomography, photoacoustic tomography) with high potentials for clinical translation. Students will learn the aspects of instrumentation design, analytic and numerical approaches for optical data analysis, and validation of new technologies in the clinical setting.
Offered: Spring

**BME 458 HUMAN ANATOMY**
The course analyzes the structural composition of the human body from cellular to organ levels. The goal is to provide a foundation in human anatomy appropriate for students interested in the bioscience and health care professions (e.g., nursing, physical therapy, medicine, bioengineering). Learning objective will be achieved through a combination of lecture and hands-on (laboratory) approaches, reinforced by clinical examples. Graduate students (BME458) will participate in small group discussions of clinical case studies, topic appropriate biomedical devices, and prepare a term paper on the subject of their choice from the topics listed at the end of the syllabus.

**BME 460 QUANTITATIVE PHYSIOLOGY**
A quantitative, model-oriented approach to physiological systems is presented. Topics include muscle and nerve tissue, the cardiovascular system, the respiratory system, the renal system, and a variety of neural systems.

**BME 462 CELL & TISSUE ENGINEERING**
This course teaches the principles of modern cell and tissue engineering with a focus on understanding and manipulating the interactions between cells and their environment. After a brief overview of Cell and Tissue Engineering, the course covers 5 areas of the field. These are: 1) Physiology for Tissue Engineering; 2) Bioreactors and biomolecule production; 3) Materials for Tissue Engineering; 4) Cell Cultures and bioreactors and 5) Drug Delivery and Drug Discovery. Within each of these topics the emphasis is on analytical skills and instructors will assume knowledge of chemistry, mass transfer, fluid mechanics, thermodynamics and physiology consistent with the Cell and Tissue Engineering Track in BME. In a term project, graduate students must identify a technological need and present orally and in writing a proposal to meet the need. Additional assignments for graduate students
Offered: Spring

**BME 466 BIOPROCESS ENGINEERING**
This course will explore the bioprocesses involved in producing a biopharmaceutical product (therapeutic proteins, cell therapy products, and vaccines). The course will take a stepwise journey through a typical production process from the perspective of a Bioprocess Engineer, starting with cell culture and moving downstream through purification and final fill. Engineering concepts involved in bioreactor design and control, cell removal/recovery operations, and protein purification will be examined. The course will also provide an introduction to the analytical methods used to test biopharmaceutical products for critical quality attributes. The role of the regulatory agencies, like the US Food and Drug Administration, and the regulations that govern the industry will be introduced throughout the course in the context of the bioprocess to which they relate. Graduate students will need to complete a semester-end project in order to receive graduate credit for the course.

**BME 470 BIOMEDICAL MICROSCOPY**

This course covers the principles and practice of light microscopy as applied to biological and medical questions. Topics include basic light microscopy, epifluorescence, confocal and multiphoton laser-scanning microscopy, and selected methods such as CARS, FRET, FRAP, FCS, etc. This course is jointly listed as 470 for graduate students. Some homework problems are “470 only”.

Offered: Fall

**BME 474 BIOMED SENSORS, CIRCUITS & INTR**

Course will cover circuits and sensors used to measure physiological systems at an advanced level. Both signal conditioning and sensor characteristics will be addressed. Topics will include measurement of strain, pressure, flow, temperature, biopotentials, data acquisition, and electrical safety. The laboratory will focus on the practical implementation of electronic devices for biomedical measurements.

Offered: Spring

**BME 483 BIOSOLID MECHANICS**

Application of engineering mechanics to biological tissues including bone, soft tissue, cell membranes, and muscle. Realistic modeling of biological structures, including the heart, cells, and musculoskeletal tissues. Experimental methods and material models.

Offered: Fall

**BME 486 FINITE ELEMENTS**

This course provides a thorough grounding on the theory and application of linear finite element analysis in solid and structural mechanics and related disciplines. Topics: matrix structural analysis concepts and computational procedures, review of linear elasticity, variational methods and energy formulation, weighted residual methods and Galerkin techniques, shape functions based on assumed displacements, isoparametric formulation, FE solution of heat transfer problems, global analysis aspects, error estimation and convergence. MATLAB is used extensively throughout the course.

Offered: Fall

**BME 487 NONLINEAR FINITE ELEMENT**

The theory and application of nonlinear FE methods in solid and structural mechanics, and biomechanics. Topics: review and generalization of linear FE concepts, review of solid mechanics, nonlinear incremental analysis, FE formulations for large displacements and large strains, nonlinear constitutive relations, incompressibility and contact conditions, hyperelastic materials, damage plasticity formulation, solution methods, explicit dynamic formulation.

**BME 489 BIOSENSORS**

This course introduces students to the highly interdisciplinary field of biosensors, with focus on electrochemical transduction. After an overview of the fundamental principles, the course will introduce various strategies to apply the scientific theory and mechanisms to practical issues such as immunoassays, detection of DNA mutation or environmental toxins, metabolic activity, and in-vivo neuronal signal monitoring. The students will be exposed to recent publications that highlight key advances in this field and learn how various chemical, biological and engineering concepts are used in synergy to achieve state-of-the-art sensing of important biological molecules. Emphasis is placed on active participation by students, including literature presentations, critical evaluation of articles, concise technical writing and in-depth discussions.

**BME 491 MASTER'S READING IN BME**
BME 492 SP TOP: MEDICAL DEVICE DESIGN

BME 493 MASTER’S ESSAY

BME 494 MASTERS INTERNSHIP

BME 495 MASTER’S RESEARCH IN BME

BME 496 CURRENT RESEARCH SEMINARS

BME 502 ANALYTIC FOUNDATIONS IN BME
The goal of this course is to introduce students to a select range of key concepts and methods from engineering and applied mathematics that are common across most subdisciplines of BME and to illustrate by example how these concepts and methods can be applied directly in the study of biological systems and/or for the solving of biological problems. We expect that students completing the course will have acquired basic practical skills to develop novel analytic approaches to biological problems and will be well prepared for subsequent coursework in their chosen discipline.
Offered: Fall

BME 513 INTRODUCTION TO FMRI
This course introduces students to the physics of MR imaging and reviews its application to medical imaging. How the MR technique can take advantage of physiological principles and tissue structure to provide diagnostic image for clinicians and researchers is discussed. Then what can be learned about brain functions through MR imaging is covered. In particular, students are introduced to functional brain imaging and related issues in data analysis. The goal of the class is to provide students with a comprehensive background of the MR imaging technique and its application to medical or research issues.
Offered: Fall

BME 589 WRITING PROPOSALS IN BME
This course covers the essential aspects of organization and content for writing formal scientific proposals. Open to second-year Ph.D. candidates.
Offered: Spring

BME 591 PHD READINGS IN BME
Offered: Spring

BME 592 SPEC TOPICS: MECHANOBIOLOGY

BME 593 LABORATORY ROTATIONS IN BME
Attend seminars first half of the semester and then students rotate in at least 3 different labs during the first year of graduate study to learn of the diversity of research opportunities for Ph.D. research.
Offered: Spring

BME 594P INTERNSHIP RESEARCH PART-TIME

BME 595 PHD RESEARCH

BME 595A PHD RESEARCH IN ABSENTIA

BME 890 SUMMER IN RESIDENCE - MA

BME 895 CONT OF MASTER'S ENROLLMENT

BME 897 MASTER'S DISSERTATION
BME 897A MASTERS IN-ABSENTIA

BME 899 MASTER'S DISSERTATION

BME 985 LEAVE OF ABSENCE

BME 986V FULL TIME VISITING STUDENT

BME 990 SUMMER IN RESIDENCE

BME 995 CONT OF DOCTORAL ENROLLMENT

BME 997 DOCTORAL DISSERTATION

BME 997A DOCT DISSERTATN IN ABSENTIA

BME 999 DOCTORAL DISSERTATION

BME 999A DOCT DISSERTATN IN ABSENTIA

BME 999B PHD IN-ABSENTIA ABROAD

CAS 016 16MM FILM PRODUCTION

Film is a living thing. The little silver halide crystals on film emulsion are organic and alive. This intensive, three-week workshop will be a mini-biography of a single film. Guiding you through every aspect of authoring a short work on 16mm black & white film stock, this workshop will plunge you head-first into an intimate relationship with the medium, with all of its difficulties, beauties, and idiosyncrasies. Topics to be covered include: principles of narrative, documentary, and experimental filmmaking; the materiality of film; basic cinematography, including the framing and lighting of a shot; purchasing and caring for film stock; how to load and operate a Bolex camera; film processing, digital transfer, and the lab; cutting and splicing film; and projection. Throughout this course, each participant will work towards completing one short movie. This will culminate in a group screening, where each person will project their own movie. Non-residential tuition: $1775

CAS 025 CREATNG INCLUSVE CAMPUS COMM

CAS 052 WORKSHOP LEADER GRAD

CAS 085 English as a Second Language (ESL) Course for Arts, Sciences and Engineering Graduate Students

Specifically for International Graduate Students, this course emphasizes the acquisition of English cultural and linguistic skills needed for clear communication in the university and career environments. Primary areas covered will be accent reduction, pragmatics (culture’s role in language), nonverbal communication, public speaking, and academic and business writing. Offered: Fall

CAS 089 ESL SUMMER INTENSIVE ENGLISH PROGRAM

The Summer Intensive English Program is offered for international graduate students at the University of Rochester. Classwork will allow students to practice and refine real-life, practical English skills before the start of Fall 2012 classes. The group size will be small, allowing each student ample opportunities to practice real speaking in a supportive environment. Topics include spoken interpersonal communication, English pronunciation, advanced conversational English grammar, and English for academic purposes. July 23-27, classes will be held from 1pm-5pm Monday-Friday. July 30-August 20, classes will be help from 9am-1pm. Permission of the Graduate Studies Dean's Office is required. Please contact 585-275-4153 or gradstudies@mail.rochester.edu for the permission code. Offered: Summer

CAS 089A ESL:AM CULTR & COMM FOR ESL
This highly-interactive class is aimed at advanced speakers of English as a Second Language and teaches strategies for navigating everyday work and life situations. This class is designed for professionals whose jobs involve extensive spoken interpersonal communication, such as medical practitioners and teaching assistants/instructors. Linguistically and culturally challenging situations such as giving advice, relating disagreeable facts, making presentations, negotiating, networking, and interviewing for a job will be covered. *May be taken concurrently with any two other ESL courses.

Offered: Summer

**CAS 089B ESL:ADV CONVERSTNL ENG GRAMR**
This class teaches the basics of how sounds are made with the mouth, and the "musical patterns" [prosody] of English. Learners will have abundant, interactive opportunities to apply this knowledge to their own speech and become better understood by their listeners *May be taken concurrently with CAS 089A and one other ESL course or with any 1 other ESL offering.

Offered: Summer

**CAS 089C ESL:ENG PRONUNCIATN&ACNT RED**
This class is designed for speakers of English as a Second Language who are already familiar with English grammar rules, but still struggle to use them when speaking. This class will systematically review grammar rules and then provide students with conversational activities and intensive instructor feedback to help correct fossilized mistakes. *May be taken concurrently with CAS 089A and one other ESL course or with any 1 other ESL offering.

Offered: Summer

**CAS 089D ESL:ENG FOR ACADEMIC PURPOSES**
This course teaches writing, speaking, and listening strategies that English as a Second Language speakers can use to succeed in a classroom setting. Topics such as writing papers, giving academic presentations, and understanding academic lectures will be covered. *May be taken concurrently with CAS 089A and one other ESL course or with any 1 other ESL offering.

Offered: Summer

**CAS 090 ESL: SUMMER INTENSIVE PROG**

**CAS 101 JUSTICE AND EQUALITY**

**CAS 109 INTENSIVE ACADEMIC WRIT SEMR**

**CAS 120 EXPLORE INTERCULTURAL**

**CAS 125 CREATNG INCLUSVE CAMPUS COMM**

**CAS 131 REFORMATNS IN WESTRN THGHT**

**CAS 142 METH OF INQUIRY**
Workshop-style course will help you establish good study habits and hone your study skills. It is designed to help you sharpen your time management, note-taking, exam-preparation, and other skills and strategies, as well as work on increasing motivation and dealing with stress, so that you get the most out of your college career.

Offered: Fall Spring

**CAS 147 THE CULTURE OF THE ACADEMY**

**CAS 149 CULTURE OF THE ACADEMY II**
This course will guide Kearns Center Seniors through the process of applying for entry into PhD programs, as well fellowships and national awards for graduate study. One of the main goals of the Kearns Center, and specifically for the McNair program, is to encourage intellectually gifted undergraduates to enroll in graduate programs in various disciplines, and to complete the Ph.D. and enter the academy as college and/or university professors and researchers.

Offered: Fall
CAS 170 U.S. LIFE: CUSTOMS & PRACTICES
Through this course students will explore campus, community and American culture, enhance their intercultural competence, and build academic skills to improve their success in the American classroom. Students will compare cultures through a variety of readings, in class discussions, blogs and outside class activities. Topics include verbal and non-verbal communication, education systems, ethics, relationships, perception, beliefs, values and norms. *Registration for U.S. Life Workshops also required

CAS 203 GIFTING, VIOLN & INDEBTEDBOD

CAS 215 ACHIEVEMENT VS. CONFORMITY
What is achievement? Who are the achievers? Who are the conformers? What are the common characteristics of achievers and conformers? How does conformity impact what we think of as achievement? What makes one individual seek to stand out and another to remain undifferentiated from the peer group? Combining literary and ethnographic techniques merged to the personal narratives of the student participants, this course explores the intersecting constraints of achievement and conformity. Fieldwork and a panoply of academic and popular media, coupled with narratives in “the ethnographic I,” will be deployed in order to prepare student participants with the skills needed to complete the required auto-ethnography, the benchmark course requirement.

CAS 230 APPROACHES TO CONFLICT RES

CAS 245 LIT, MEDIA & MODERN ENVIRON
Globalization, war, animal rights, mass media, consumer culture, eco-tourism, the rise of the megacity, and the conquest of indigenous peoples—these are just some of the issues raised in the selection of American environmental literary works surveyed in this course. Reading a diverse range of “green” texts, from slave narrative and nature writing to novels and political essays, we will study how writers imagine relationships to place and environment amidst accelerating social, economic, and technological change.

CAS 251 INTRO TO GEOGRAPHIC INFO SYS

CAS 267 ECOMEDIA

CAS 268 FOOD, MEDIA, LITERATURE

CAS 276 BULLYING, VIOLENCE & COMPTITN

CAS 286V VISITING UNDERGRADUATE

CAS 303 ECOREPS: INTRO LDRSHIP & SUSTNBL

CAS 304 URBAN CRIME AND JUSTICE

CAS 310 UG TEACHING ASST PROGRAM

CAS 315 SCHOOL TO PRISON PIPELINE
Is the public school system with its widely embraced, inordinate surveillance, suspension and expulsion of Black and Brown students technically a “feeder system” for the criminal justice system, fueling the creation of a school-to prison (and/or deportation) pipeline? Is prison the new form of slavery? Beginning with the 13th Amendment and combining literary and ethnographic techniques merged to the personal narratives of the student participants, this course explores how schooling and mass incarceration are (dis)connected. Fieldwork, academic texts and popular media will be deployed in order to prepare student participants with the skills needed to complete the required auto-ethnography, the benchmark course requirement.

CAS 350 RISING LEADER: 1ST YR LDRSHI

CAS 351 LDRSHIP IN THE COLL COMM I
Open by application only. This class is a requirement for Resident Advisor (RA) selection. Students wishing to participate in RA selection must apply in late October, and interview for a space in the class. The class explores important issues including: peer leadership, communication, diversity, and community development which are essential to the RA position.

**CAS 352 WORKSHOP LEADERSHIP**
This course surveys group dynamics, learning theory and pedagogy. The larger goals for this course are to develop leadership skills, to foster ongoing communication among faculty members and workshop leaders, and to provide an environment for focused review of workshop modules.
Offered: Fall Spring

**CAS 353 LEADERSHIP IN COLLEGE COMM**

**CAS 354 PEER MENTORING AND ADVISING**
This course surveys peer mentoring and academic advising in the college community. The goal of this course is to explore and develop skills on mentoring, active listening, professional etiquette, leadership and University Resources available to assist students as they navigate their college choices. This course is primarily meant for Juniors who are intending to be a peer adviser in their senior year. Others may request to join per instructor permission.

**CAS 355 WORKSHOP LEADERSHIP**
This course surveys group dynamics, learning theory and pedagogy. The larger goals for this course are to develop leadership skills, to foster ongoing communication among faculty members and workshop leaders, and to provide an environment for focused review of workshop modules.
Offered: Fall Spring

**CAS 358 The Leadership Experience**
Although leadership has been recognized throughout history, the study of this phenomenon has grown immensely in recent decades, exploring fundamental questions, including, "What is leadership?" and, "Can it be taught?" This course will provide you with an opportunity to learn about leadership history, theory and practice by engaging with other leaders, and by analyzing your own experiences. Through readings, lectures, video, and guest speakers, the course will introduce various concepts and models, with particular emphasis on the social change model of leadership. Students emerge from the class with a well-informed definition of this complex and multifaceted concept, and well-connected to exercise leadership on campus and beyond.

**CAS 360 POST-BLKNESS & BLACK IDENT**
This course will explore themes at the intersection of community, diversity, innovation, leadership, and organization in American society. We will be especially concerned with how these themes emerge as central to the experience of students attending institutions of higher learning. Readings will vary from semester to semester.

**CAS 370 APPLIED LDRSHIP IN STUDNT GOV**

**CAS 375 THE ANTHROPOLOGY OF VIOLENCE**

**CAS 386V EARLY CONNECTNS AFRICA PRGRM**

**CAS 390 SUPERVISED TEACHING**

**CAS 391 INDEPENDENT STUDY**

**CAS 394 INTERNSHIP**

**CAS 396 REMS SEMINAR**

**CAS 396A SUMMER INTERNSHIP**
This internship is designed for, and may only be taken by, students whose summer employers require them to "register for credit." The course carries 0 credit hours, but is graded "CREDIT/NO CREDIT." The Dean's approval is required before registration is permitted; students should see an adviser in the Center for Academic Support. No tuition or fees are charged.

**CAS 396B SUMMER INTERNSHIP**
This internship is designed for, and may only be taken by, students whose summer employers require them to earn credit. Consultation with the Career Center must precede registration. After student receives offer letter and completes learning Goals and Objectives with on-site supervisor, the student engages in an internship of at least 100 hours over at least five weeks. Ten specified topics concerning the organization and the student's experiences are addressed in analytic journals, normally submitted weekly via Blackboard. Written evaluation completed at end of internship. Graded Pass/Fail. (NOTE: International students follow separate CPT procedures; see ISO for further details.)

**CAS 396C FALL INTERNSHIP**
This internship is designed for, and may only be taken by, students whose employers require them to "register for credit." The course carries 0 credit hours, but is graded "CREDIT/NO CREDIT." The Dean's approval is required before registration is permitted; students should see an adviser in the Center for Advising Services.

**CAS 396D SPRING INTERNSHIP**
This internship is designed for, and may only be taken by, students whose employers require them to "register for credit." The course carries 0 credit hours, but is graded "CREDIT/NO CREDIT." The Dean's approval is required before registration is permitted; students should see an adviser in the Center for Advising Services.

**CAS 396I SPECIAL INTERNSHIP**
This internship course is designed for international students with F1/J1 visa status pursing paid internships in the U.S. The internship opportunity must relate to the student's program of study. Students will submit a learning agreement and completion assessment. Consultation with the College Center for Advising Services is required for registration. A grade of pass/fail is awarded based on the internship supervisor's evaluation and successful completion of the learning agreement.

**CAS 397 SENIOR SCHOLAR RESEARCH**

**CAS 397A EUROPEAN HEALTH SCIENCE INTERNSHIP**

**CAS 397B EUROPEAN BUSINESS INTERNSHIP**

**CAS 397F UK BUSINESS INTERNSHIP**

**CAS 397H UK HEALTH SCIENCES INTERNSHIP**

**CAS 397K KEY COURSE PRACTICUM**

**CGR 101 NEW TESTAMENT & CLASSICAL GREEK I**
An introduction to Greek designed to prepare students to read the Classical Greek dramatists, philosophers, orators, and historians, and the New Testament.
Offered: Fall

**CGR 102 NEW TESTAMENT & CLASSICAL GREEK II**
A continuation of CGR 101.
Offered: Spring

**CGR 103 INTERMEDIATE GREEK I**
Review of Greek grammar through readings in Plato. Special focus given to more complex grammatical structures.
Offered: Fall
CGR 202 HOMER'S ODYSSEY
A study, translation and discussion of selections from Homer's Odyssey. Special attention given to meter and the poetic aspects of Homeric Greek.
Offered: Spring

CGR 202W HOMER'S ODYSSEY

CGR 205W ARISTOPHANES' CLOUDS

CGR 208 THUCYDIDES
This course will consist of a close reading and translation of sections from The History of the Peloponnesian War by Thucydides, in both English and Greek. Special areas of focus will include an examination of authorial stance, reception, the use of oratory, and the book’s relationship with other historical works.

CGR 210 EURIPIDES
An exploration of the language and thought of Euripides through a reading of one of his best-known plays, either the Medea, Hippolytos, Bacchae, or Alcestis.

CGR 214 HERODOTUS

CGR 215 SOCRATES: READING IN PLATO
Translation and discussion of various works of Plato as they pertain to the life and philosophy of Socrates. Students will also become familiar with some of the current thought and research on Plato.

CGR 390 SUPERVISED TEACHING

CGR 391 INDEPENDENT STUDY

CGR 392 HONORS RESEARCH

CGR 393 SENIOR PROJECT

CGR 394 INTERNSHIP

CGR 491 MASTER'S READING COURSE

CHE 113 CHEMICAL PROCESS ANALYSIS
Course Content and Method of Instruction: Lectures and discussion. Methodology and problem solving techniques in chemical engineering; the concepts of mass and energy conservation in both reacting and non-reacting chemical systems; the concept of equilibrium in chemical and physical systems and the basic principles of thermodynamics are presented; both steady state and transient behavior are discussed for some special systems.
Offered: Fall

CHE 116 NUMERICAL METHODS AND STAT
This course provides an introduction to numerical methods and engineering statistics for chemical engineers. Students learn to use computer models and statistics to understand engineering systems. The focus of numerical methods is translating engineering problems into algorithms and implementing them in a spreadsheet or programming language. Topics covered include basic data structures, programming flow control, plotting, function minimization, integration and differential equations. The statistics portion teaches students basic probability theory, the central limit theorem, hypothesis testing, confidence intervals, regression, model fitting and basic error analysis.
Offered: Spring

CHE 150 GREEN ENERGY
An introductory engineering course about energy production, conversion, and utilization. The first half of the course covers energy and power metrics, material and energy balances and the fundamental laws of thermodynamics. The remainder of the course examines traditional and alternative energy sources, energy distribution, and energy utilization. Course activities include weekly homework assignments, exams, and a project. Emphasis is on assumption-based problem solving.

Offered: Fall Spring

**CHE 213 ENGINEERING OF SOFT MATTER**
This course will provide an overview of several contemporary research topics pertaining to structured organic materials. Lectures will focus on intermolecular interactions and the thermodynamics of self-assembly. Additional lectures will introduce molecular crystals, polymer crystallinity, liquid crystals, self-assembled monolayers, surfactants, block copolymers, and biomimetic materials. Homework assignments and a brief technical presentation will be required. Advanced undergraduate students are welcome.

Offered: Spring

**CHE 225 CHE THERMODYNAMICS**
Lectures on the origin and use of the first and second laws of thermodynamics, followed by a discussion of equilibrium criteria. Thermodynamic descriptions of real gases and liquids are developed and applications of thermodynamics to phase and chemical equilibrium complete the course. Weekly problem assignments, problem review sessions, and student projects.

Offered: Fall

**CHE 231 CHEMICAL REACTOR DESIGN**
This course combines the concepts of mass balances, reaction rates, stoichiometry, and chemical equilibrium to introduce the fundamentals of chemical reactor design. Isothermal, uncatalyzed homogeneous reactions are considered initially, but more complex reactions, including heterogeneous, catalyzed reactions and biological reactions are also considered. Approaches to kinetic data acquisition and analysis techniques are presented, and then combined with knowledge of reaction mechanisms or the pseudo-state hypothesis to develop nonelementary rate laws. The course ends with nonisothermal reactor design.

Offered: Spring

**CHE 243 FLUID DYNAMICS**
An introduction to the basic fluid flow and conservation laws of transport phenomena including the principles and applications of fluid mechanics (momentum transport) to engineering problems. Topics include a detailed analysis of conservation of mass and momentum equations, microscopic and macroscopic balances, dimensional analysis and the application of fluid flow problems to chemical engineering.

Offered: Spring

**CHE 244 HEAT & MASS TRANSFER**
A fundamental course in heat transfer processes and an introduction to mass transfer. Topics include equations of energy conservation, conduction, convection, radiation; equations for chemical species conservation, diffusion, macroscopic balances. Emphasis on problem solving, especially for purposes of design.

Offered: Fall

**CHE 246 CHE PRINCIPLES LAB - LECTURE**
Hands-on experience with concepts in phase equilibrium, heat and mass transfer, and chemical kinetics. Emphasis on measurement techniques, data analysis, and experimental design. Involves structured experiments, open-ended projects, and oral or written reports.

Offered: Spring

**CHE 250 SEPARATION PROCESSES**
Application of mass transfer and thermodynamics to chemical separation techniques. Fundamentals and design of processes, such as distillation, absorption, extraction, and crystallization. Fixed-bed operations, such as ion exchange and chromatography, and membrane processes are also considered.

Offered: Spring
CHE 255  CHE PROCESSES LAB - LECTURE
Operation and scale-up of chemical process equipment for chemical reaction and purification. Examination of the factors that affect performance in practice. Exploratory experiments and preliminary experimental design, as well as oral and written reports are required.
Offered: Fall

CHE 258  ELECTROCHEMICAL ENGINEERING & FUEL CELLS
The course will concentrate on presenting the principles of electrochemistry and electrochemical engineering, and the design considerations for the development of fuel cells capable of satisfying the projected performance of an electric car. The course is expected to prepare you for the challenges of energy conversion and storage and the environment in the 21st century. Course is offered October 23 - December 11.
Offered: Fall

CHE 259  TRANSPORT PHENOMENA IN BIOLOGICAL SYSTEMS
This course will provide an overview of transport phenomena in biological systems that are critical to the function of all living organisms. The fundamental laws and equations of transport phenomena will be applied to topics including cellular, cardiovascular, respiratory, liver and kidney transport, blood flow and rheology, and circulation in tissues and arteries.
Offered: Fall

CHE 260  SOLAR CELLS
This course will introduce students to the basics of photovoltaic devices: physics of semiconductors; pn junctions; Schottky barriers; processes governing carrier generation, transport and recombination; analysis of solar cell efficiency; crystalline and thin-film solar cells, tandem structures, dye-sensitized and organic solar cells. Students will learn about current photovoltaic technologies including manufacturing processes, and also the economics of solar cells as an alternative energy source. Critical analysis of recent advances and key publications will be a part of the course work.
Offered: Fall

CHE 264  BIOFUELS
The utilization of fossil fuels generates carbon emission in tens of billion metric tons per year worldwide, causing alarming climate change. Traditionally, jet, internal-combustion, and Diesel engine fuels have been acquired by energy-intensive distillation of petroleum, and the recent surge in fracking has raised additional environmental concerns. The urge to explore alternative resources for fuels has never been stronger. This course will start with chemical and thermochemical processing of food crops, plant seeds, animal fats, and lignocellulose to be followed by recent advances in eco-friendly and cost-effective strategies for both lignocellulose and microalgae as sustainable bioresources. In principle, biofuels can be derived following chemical and biological approaches in parallel or in series. The synergy between these two distinct approaches and with the conventional oil refinery should be exploited to perfect bio-refinery over the long haul.

CHE 265  SUSTAINABLE CHEMICAL PROCESSES
Course Description: This course is motivated by advancing chemical processing and product development toward long-term sustainability. Major elements include the acquisition of high-impact bulk and fine chemicals from renewable resources-- e.g. animal fats, plant seeds, lignocellulose, algae, and carbon dioxide; use of environmentally benign solvents-- e.g. ionic liquids, supercritical carbon dioxide, fluorous solvents, and liquid polymer-- for reactions and separations; chemical reactions activated by unconventional means-- e.g. ball milling, microwave heating, and ultrasound irradiation-- requiring minimum energy, catalysts, and solvents; chemical and enzymatic catalysis enhanced by process integration to minimize the need for product separation and purification; microreactor technologies to maximize rates of heat & mass transfer, chemical reaction rates, yields and selectivity of products, in addition to facilitating process control, optimization, and scale-up

CHE 266  BIOPROCESS ENGINEERING
See BME 266 for course description
Offered: Spring

CHE 272  PROCESS DYNAMICS & CONTROL
Lectures, problem sets, and design projects. Introduction to the dynamic behavior of chemical engineering systems and to the analysis of feedback control systems. Methods of design of single feedback loops and multivariable systems are covered. (2 CRS)
Offered: Fall Spring

**CHE 273 CHEMICAL ENGINEERING PROCESS DESIGN**

The course will cover material related to the conception and design of chemical processes. Topics will include energy systems analysis, the attainability region approach for reactor network synthesis and the effects of statistical uncertainty on decision making when evaluating alternative designs. Modern techniques for stochastic simulation of random processes will also be studied. The use of computational software packages like MATHCAD and DESIGN II will be expected in doing many of the homework assignments. In addition to two examinations, a computer-oriented design project will be assigned involving the use of chemical engineering principles for the solution of a process flow sheet problem. A good background in computer programming is necessary since many of the course assignments make use of numerical techniques.
Offered: Fall

**CHE 276 POLYMER SYNTHESIS**

An introduction to polymerization reaction mechanisms. The kinetics of commercially relevant polymerizations are emphasized along with a discussion of important, contemporary polymerization schemes. Approaches to functionalize polymers and surface-initiated polymerizations will also be covered. An overview of polymer characterization techniques, emphasizing compositional analysis, will be presented. The course is intended for graduate students in Chemical Engineering, Chemistry, Materials Science, and Biomedical Engineering, but advanced undergraduates are welcome.

**CHE 279 CHEMICAL ENGINEERING PRACTICE**

Issues of relevance to the practice of chemical engineering. Topics include basic economic principles and marketing issues, ethics, plant safety, worker education and training and environmental implications in process designs. Students visit a local industry to gain perspective on the scale of a chemical process. Presentations by practicing engineers expose the versatility of a chemical engineering education.
Offered: Spring

**CHE 282 PROCESSING MICROELECTRONIC DEVICES**

This course features an overview of processes used in the fabrication of microelectronic devices, with emphasis on chemical engineering principles and methods of analysis. Modeling and processing of microelectronic devices. Includes introduction to physics and technology of solid state devices grade silicon, microlithography, thermal processing, chemical vapor deposition, etching and ion implantation and damascene processing. Course is offered August 30 - October 18.
Offered: Fall

**CHE 286 POLYMER SCIENCE & ENGINEERING**

Mechanisms and kinetics of polymerization reactions; solution, suspension, and emulsion polymerization processes; thermodynamics of polymer solutions; characterization by membrane osmometry, light scattering, viscometry, and size exclusion chromatography; polymer rheology including linear viscoelasticity; polymer morphology and phase transitions.
Offered: Spring

**CHE 289 BIOSENSORS**

This course introduces students to the highly interdisciplinary field of biosensors, with focus on electrochemical transduction. After an overview of the fundamental principles, the course will introduce various strategies to apply the scientific theory and mechanisms to practical issues such as immunoassays, detection of DNA mutation or environmental toxins, metabolic activity, and in-vivo neuronal signal monitoring. The students will be exposed to recent publications that highlight key advances in this field and learn how various chemical, biological and engineering concepts are used in synergy to achieve state-of-the-art sensing of important biological molecules. Emphasis is placed on active participation by students, including literature presentations, critical evaluation of articles, concise technical writing and in-depth discussions.
Offered: Spring

**CHE 292 BIOINTERFACES**
The course will focus on interfacial phenomena in hybrid bio-inorganic systems. The goal of the course is to increase the understanding of interactions between biomolecules and surfaces. The course will aim at investigating the behavior of complex macromolecular systems at material interfaces and the importance of such systems in the fields of biology, biotechnology, diagnostics, and medicine. The first part of the course will focus on mechanisms of interactions between biomolecules and surfaces. The second part will focus on the characterization of physical, chemical, and morphological properties of biointerfaces.

CHE 391 INDEPENDENT READING
CHE 392 SPECIAL TOPICS
CHE 393 SPECIAL ESSAY
CHE 394 INDEPENDENT INTERSHIP
CHE 395 RESEARCH
CHE 396 SPECIAL PROJECTS
CHE 398 SPECIAL TOPICS IN BIODIESEL PRODUCTION
Students will conduct operations and research in the University of Rochester Biodiesel lab. 2 credits.
Offered: Fall Spring

CHE 400 APPLIED BOUNDARY VALUE PROB
See ME 201 for course description
Offered: Fall

CHE 413 ENGINEERING OF SOFT MATTER
This course will provide an overview of several contemporary research topics pertaining to structured organic materials. Lectures will focus on intermolecular interactions and the thermodynamics of self-assembly. Additional lectures will introduce molecular crystals, polymer crystallinity, liquid crystals, self-assembled monolayers, surfactants, block copolymers, and biomimetic materials. Homework assignments and a brief technical presentation will be required. Advanced undergraduate students are welcome.
Offered: Spring

CHE 414 MATH METH OF OPTICS & PHY
See OPT 411 for course description

CHE 420 BIOMEDICAL NANOTECH
See BME 420 for course description

CHE 430 ORGANIC ELECTRONICS

CHE 432 CONTROLLED RELEASE SYSTEMS
See BME 432 for course description

CHE 441 ADVANCED TRANSPORT PHENOMENON
This course will acquaint the student with important topics in advanced transport phenomena (momentum, heat and mass transport). Topics include laminar and turbulent flow, thermal conductivity and the energy equation, molecular mass transport and diffusion with heterogeneous and homogeneous chemical reactions. Focus will be to develop physical understanding of
principles discussed and with emphasis on chemical engineering applications. In addition to the text, the student will be exposed to classic and current literature in the field.
Offered: Fall

**CHE 447 LIQUID-CRYSTAL MATERIALS AND OPTICAL APPLICATIONS**
This course will introduce the student to the physical, chemical and optical properties of liquid crystals (LC) that are the basis for their wide and successful exploitation as optical materials for a broad variety of applications in optics, photonics and information display. Topics to be presented include: origins of LC physical properties in thermotropic and lyotropic materials as a function of chemical structure, influence of these structure-property relationships on macroscopic organization in LC mesophases, and the effect of molecular ordering and order parameter on properties of special significance for device applications. Operating principles for LC devices in a wide variety of applications will be described, including passive and tunable/switchable polarizers, wave plates, filters, information displays and electronic addressing, electronic paper, color-shifting polarizing pigments, optical modulators, and applications in photonics and lasers
Offered: Fall

**CHE 448 CONTROLLED RELEASE SYSTEMS**
See BME 448 for course description

**CHE 454 INTERFACIAL ENGINEERING**
Lectures on the fundamentals of colloids and interfaces, systems with high interfacial area, and their role in modern processes and products. Topics include interfacial tension, contact angle, adsorption, surfactants, miscelles, microemulsions, and colloidal dispersions. Techniques for formation and characterization of interfaces and colloids will be reviewed.
Offered: Spring

**CHE 455 THERMODYNAMICS & STAT MECH**
Please see CHM 455 for the course description.

**CHE 458 ELECTROCHEMISTRY OF FUEL CELLS AND BATTERIES**
The course will concentrate on presenting the principles of electrochemistry and electrochemical engineering, and the design considerations for the development of fuel cells capable of satisfying the projected performance of an electric car. The course is expected to prepare you for the challenges of energy conversion and storage and the environment in the 21st century. Course is offered October 23 - December 11.

**CHE 460 SOLAR CELLS**
This course will introduce students to the basics of photovoltaic devices; physics of semiconductors; pn junctions; Schottky barriers; processes governing carrier generation, transport and recombination; analysis of solar cell efficiency; crystalline and thin-film solar cells, tandem structures, dye-sensitized and organic solar cells. Students will learn about current photovoltaic technologies including manufacturing processes, and also the economics of solar cells as an alternative energy source. Critical analysis of recent advances and key publications will be a part of the course work.
Offered: Fall

**CHE 462 CELL & TISSUE ENGINEERING**
Teaches the principles of modern cell and tissue engineering with a focus on understanding and manipulating the interactions between cells and their environment. After a brief overview of Cell and Tissue Engineering, the course covers 5 areas of the field. 1) Physiology for Tissue Engineering; 2) Bioreactors and biomolecule production; 3) Materials for Tissue Engineering; 4) Cell Cultures and bioreactors and 5) Drug Delivery and Drug Discovery.

**CHE 464 BIOFUELS**
This course will provide the student with a grounding in the fundamental principles of biofuels, including their sources, properties, and the biological and chemical processes by which they are made.
Offered: Fall

**CHE 465 SUSTAINABLE CHEMICAL PROCESSES**
Elements of sustainable chemical processes. Generation of transportation fuels and chemical platforms from renewable resources-- e.g. lignocellulose, algae, and carbon dioxide-- for production of bulk and fine chemicals traditionally derived from petroleum. Use of environmentally benign solvents-- e.g. ionic liquids, supercritical carbon dioxide, fluorous solvents, and liquid polymer-- for reactions and separations. Chemical reactions activated by unconventional means-- e.g. ball milling, microwave heating, and ultrasound irradiation-- requiring minimum energy, catalyst, and solvent. Chemical and enzymatic catalysis enhanced by process integration to minimize the need for product separation and purification. “Click reactions” applied to the synthesis of peptides and advanced materials. Microreactor technologies to maximize heat & mass transfer, reaction rate, product yield and selectivity, in addition to facilitating process control, optimization, and scale-up.

Offered: Spring

**CHE 466 BIOPROCESS ENGINEERING**

See BME 266 for course description

**CHE 469 BIOTECHNOLOGY & BIOENGINEERING**

The life science and engineering principles underlying biotechnology processes; established biotechnology processes including microbial and enzyme conversions, metabolic pathways, and fermentation kinetics; tools for biotechnology development including the recombinant DNA and monoclonal antibody techniques; emerging areas at the forefront of biotechnology, including immune technology and tissue and organ cultures.

Offered: Spring

**CHE 476 POLYMER SYNTHESIS AND CHARACTERIZATION**

An introduction to polymerization reaction mechanisms. The kinetics of commercially relevant polymerizations are emphasized along with a discussion of important, contemporary polymerization schemes. Approaches to functionalize polymers and surface-initiated polymerizations will also be covered. An overview of polymer characterization techniques, emphasizing compositional analysis, will be presented. The course is intended for graduate students in Chemical Engineering, Chemistry, Materials Science, and Biomedical Engineering, but advanced undergraduates are welcome.

**CHE 482 PROCESSING MICROELECTRONIC DEVICES**

This course features an overview of processes used in the fabrication of microelectronic devices, with emphasis on chemical engineering principles and methods of analysis. Modeling and processing of microelectronic devices. Includes introduction to physics and technology of solid state devices grade silicon, microlithography, thermal processing, chemical vapor deposition, etching and ion implantation and damascene processing. Course is offered August 30 - October 18.

**CHE 485 THERMODYNAMICS & STATISTICAL MECHANICS**

Introduction to the topic: Thermodynamics and Statistical Mechanics. In the beginning macroscopic thermodynamics including phase equilibria and stability concepts will be covered followed by material related to the principles of statistical mechanics. Applications to various modern areas of the topic will be examined including the Monte Carlo simulation method, critical phenomena and diffusion in disordered media. The course will require completion of a project as well as regular homework assignments.

Offered: Spring

**CHE 486 POLYMER SCIENCE & ENGINEERING**

Mechanisms and kinetics of polymerization reactions; solution, suspension, and emulsion polymerization processes; thermodynamics of polymer solutions; the Flory-Huggins theory; principles and practice of membrane osmometry, light scattering, viscometry, and size exclusion chromatography; polymer rheology and mechanical properties; polymer morphology and phase transitions.

Offered: Fall

**CHE 488 INTRO TO ENERGY SYSTEMS**

A succinct, yet complete and critical introduction to the different means of producing energy.
This course aims to introduce students to the highly interdisciplinary field of electrochemical biosensors, and offer insight into the underlying engineering principles. After an overview of fundamental electrochemical principles and biosensors, the course will focus on introducing various designing strategies for electrochemical biosensors, with emphasis on practical applications such as immunoassays, DNA detection and in-vivo neuronal signal monitoring. The students will be exposed to recent publications that highlight key advances in this field. Strong focus will be given to active participation by the students, including literature presentations, critical evaluation of articles, concise technical writing and in-depth discussions.

Offered: Spring

**CHE 491** MASTER'S READING COURSE CHE

**CHE 492** BIOINTERFACES

The course will focus on interfacial phenomena in hybrid bio-inorganic systems. The goal of the course is to increase the understanding of interactions between biomolecules and surfaces. The course will aim at investigating the behavior of complex macromolecular systems at material interfaces and the importance of such systems in the fields of biology, biotechnology, diagnostics, and medicine. The first part of the course will focus on mechanisms of interactions between biomolecules and surfaces. The second part will focus on the characterization of physical, chemical, and morphological properties of biointerfaces.

**CHE 493** MASTER'S ESSAY

**CHE 494** MASTERS INTERNSHIP

**CHE 495** MASTER'S RESEARCH IN CHEM EN

**CHE 496** RESEARCH SEMINAR

Offered: Fall

**CHE 497** TEACHING CHEM ENGR

**CHE 589** TEACH, RESEARCH, WORK AFRICA

**CHE 591** READING COURSE

**CHE 594** INTERNSHIP

**CHE 595** PHD RESEARCH IN CHEM ENGR

**CHE 595A** PHD RESEARCH IN ABSENTIA

**CHE 890** SUMMER IN RESIDENCE - MA

**CHE 895** CONT OF MASTER'S ENROLLMENT

**CHE 897** MASTERS DISSERTATION

**CHE 897B** MASTER'S IN-ABSENTIA ABROAD

**CHE 899** MASTERS DISSERTATION

**CHE 899A** MSTRS DISSERTATN IN ABSENTIA

**CHE 985** LEAVE OF ABSENCE

**CHE 986V** FULL TIME VISITING STUDENT
CHE 990 SUMMER IN RESIDENCE

CHE 995 CONT OF DOCTORAL ENROLLMENT

CHE 997 DOCTORAL DISSERTATION

CHE 997A DOCT DISSERTATN IN ABSENTIA

CHE 999 DOCTORAL DISSERTATION

CHE 999A DOCT DISSERTATN IN ABSENTIA

CHE 999B DOC DISS IN-ABSENTIA ABROAD

CHI 101 ELEMENTARY CHINESE I
This 6-credit course is designed for beginners of Chinese. It introduces students to the sounds, basic sentence structures, and the writing system of Mandarin Chinese. Pinyin, the phonetic translation system, is taught and required throughout the course. Emphasis will be on developing listening and speaking skills as well as building a vocabulary based on 400 ideographic characters.

CHI 102 ELEMENTARY CHINESE II
This course is the continuation of Chinese 101. Knowledge of Pinyin is required. The focus continues to be on developing listening and speaking skills with an increasing emphasis on reading and writing in ideographic characters. It aims to build a vocabulary based on 500 characters.
Offered: Spring

CHI 111 INTENSIVE BEGINNING CHINESE

CHI 114 CONVERSATIONAL CHINESE
Emphasis on speaking skills with focus on current issues in Chinese culture and society. May be taken concurrently with CHI 151 or CHI 152. This is a two credit course which may be taken twice for credit.
Offered: Spring

CHI 151 INTERMEDIATE CHINESE I
This course is the continuation of Chinese 102. Knowledge of the Pinyin system is required for the purpose of pronunciation. The course continues to focus on developing communicating skills with an increasing emphasis on reading and writing in ideographic characters and expanding vocabulary. Course work includes two weekly recitation sessions and lab work at the multimedia center.

CHI 152 INTERMEDIATE CHINESE II
Continuation of Chinese 151, Intermediate Chinese I. Princeton's "Intermediate Chinese" will be used. Supplementary materials will include short selections from contemporary Chinese writings. Written compositions in Chinese are required. A study of modern colloquial and literary styles, drawn from contemporary writings, readings, and movies scripts in material of social and cultural interests. Basic grammar and syntax will be constantly reviewed. Special emphasis will be devoted to the expansion of reading vocabulary, sentence patterns, writing and oral skills.
Offered: Spring

CHI 202 ADVANCED INTERMEDIATE CHINESE I
This course covers various aspects of contemporary Chinese culture as found in magazines, journals, television, film and videos. Class taught in Chinese.
Offered: Fall

CHI 203 ADVANCED INTERMEDIATE CHINESE II
This course covers various aspects of contemporary Chinese culture as found in magazines, journals, television, film and videos. Taught in Chinese.
Offered: Spring

CHI 205 ADVANCED CHINESE I
This course covers various aspects of contemporary Chinese culture as found in magazines, journals, television, film and videos. Taught in Chinese.

CHI 206 ADVANCED CHINESE II
Based on a Chinese culture heritage course, taught in Chinese. Focus on reading, writing and demonstrating in Chinese with power point.

CHI 211 INTRODUCTION TO PRE-MODERN CHINESE LITERATURE
In this survey we will read major authors, works, and literary genres of Chinese literature before the 20th century, with attention to several central and intertwining themes: literature and the spaces of the imagination; the experience of the past and the subversion of tradition; changing relations between fiction and history; the reimagining of gender relations through the retelling of narratives; and the emergence of a vibrant urban culture. No background in Chinese literature is required or assumed.

CHI 212 CITIES & THE COUNTRY IN MODERN CHINA
Explores changing cultural meanings of country and city from early 20th century urban culture through revolution and to the present era of mass migration and urban destruction and renewal.

CHI 213 THE HISTORY AND STRUCTURE OF CHINESE AND JAPANESE
It is well known that Chinese civilization was central to the broad historical development of East Asian cultures including that of Japan, a relationship that might suggest that of ancient Hellenic Greek and Italic Latin. While much of Japan’s vocabulary and its writing system are rooted in Chinese, however, it is less well known that Chinese and Japanese belong in fact to two entirely unrelated language families, Sinic and Japonic. This course examines the linguistic structures, historical development and interactions of the two languages. Course topics include: theories of origins and language-family affiliations; the historical development of phonological and grammatical features; the development of writing systems; and the complex role played by language in cultural influence and interaction.

CHI 214 DREAM OF THE RED CHAMBER
This course is devoted to an intensive reading of the greatest work of Chinese prose fiction, the eighteenth-century novel, Dream of the Red Chamber (Hongloumeng). We will pay close attention to the novel’s extended reflection on the relations between illusion, reality, and fabrication; its subversion of historical narrative; its construction of architectural and “natural” spaces; its intense obsession with the sensuousness of material culture; and its powerful narration of desire in early modern China. No background in Chinese literature, culture, or language assumed. All readings in English.

CHI 215 WRITING, VISUALITY, AND THE POWERS OF IMAGES
In this course, we will examine how literature from China, Japan, Turkey, and the West explores such questions of images. We will track how understandings of the powers of images change, persist, and are re-appropriated across historical time and cultural space, and consider the critical light “premodern” texts and texts from our “modern” world of images can project upon each other.
Offered: Fall

CHI 220 CHINESE LANDSCAPES: SPACE, PLACE AND TRAVEL
This course explores one of the world’s longest-running traditions of landscape representation. We'll consider such landscape genres as poetry, fiction, travel narrative, maps, painting, and photography, and consider their work across China’s long history of imperial expansion, colonization, and globalization. We'll also consider China’s places in thinking about landscape and travel in the West. All readings in English.
Offered: Fall

CHI 230 CONTEMPORARY CHINESE ART
Course explores the emergence of experimental and documentary art in China since the end of the Cultural Revolution in 1976. We will consider how questions of the remainders of the past and new urban spaces, the shifting relations of writing and images, the politics of the body, and the changing of location of China in a global cultural economy have driven wide-ranging experiments with new materials, mediums, and exhibition spaces.

**CHI 231 ASIAN CALLIGRAPHY I**

**CHI 232 ASIAN CALLIGRAPHY: HISTORY & PRACTICE**
An introduction to the Chinese and Japanese writing systems, including their historical development, artistic practices, and practical applications. One meeting per week will be devoted to the study of calligraphy. Ideal for those studying Chinese or Japanese, but experience in the languages, while helpful, is not required.

**CHI 235 PHOTOGRAPHY IN EAST ASIA**
Course explores the intertwining of photography, culture, and modernity in East Asia. Topics include the redefinition and transformation of photography within the visual cultures of 19-century Japan and early 20th-century China; and how in the photography of recent decades the border of art and documentary have become a site for engaging with urgent questions of place, displacement, the presence of the past, and an ever-changing world of images.

**CHI 237 CHINESE FILM**

**CHI 283 CHINA’S SILK ROAD**
The Silk Road, or Silk Route, is a series of trade routes through regions of the Asian continent connecting Chang’an (today’s Xi’an) in China, with Asia Minor and the Mediterranean. It extends over 4,000 miles across land and sea. Trade on the Silk Road was a significant factor in the development of the great civilizations of China, Egypt, Mesopotamia, Persia, Indian subcontinent, and Rome, and helped to lay the foundations of the modern world. This course will examine the many civilizations that made up and communicated along these routes, from the eastward expansion of Alexander the Great in the 4th century BCE and the westward expansion of Han dynasty explorers in the 2nd century BCE into modern Tajikistan and Uzbekistan, to the expansion of the Mongol empire across China, Central Asia and Europe in the 13-14th centuries.

**CHI 390 SUPERVISED TEACHING**

**CHI 391 INDEPENDENT STUDY**

**CHI 392 PRACTICUM**

**CHI 394 INTERNSHIP**

**CHI 430 CONTEMPORARY CHINESE ART**

**CHI 435 PHOTO IN EAST ASIA**

**CHI 437 CHINESE FILM**

**CHM 100 PREP FOR COLLEGE CHEMISTRY**
This two credit course is designed to provide students with the problem-solving skills required in high school A.P. Chemistry or college freshman inorganic chemistry. Topics include elementary atomic structure and bonding; moles and stoichiometry; gas laws; solution concentration; oxidation and reduction; reaction kinetics; equilibrium; and acid/base chemistry including weak acids and buffers. No audits, summer only.
Offered: Summer

**CHM 131 CHM CONCEPTS, SYSTEMS, PRACTICE I**
This 5 credit course is an introduction to the concepts of chemistry for science and engineering students, health professions students, and as a science course for students of the humanities and social sciences. Properties of chemical systems are discussed from a macroscopic and molecular perspective with examples developed from a wide range of disciplines. The topics covered
include stoichiometry, atoms and molecules, properties of gases, thermochemistry, chemical equilibrium, acids and bases, solubility equilibria, and oxidation-reduction reactions. In addition to lectures, there is a weekly 75 min. workshop. A 50 min. lab lecture and a 3-hour laboratory meet on alternate weeks. You must register for the lab lecture and laboratory (linked) prior to the start of the semester. Workshops are offered at multiple times during the week and assigned during the first week of classes. Lab fee: $114/billed. Uses T/Th 8-9:30am common exam time.

Offered: Fall Summer

CHM 132 CHM CONCEPTS, SYSTEMS, PRACTICE II
A continuation of Chemical Concepts, Systems and Practices I, emphasizing molecular and macroscopic approaches to chemical systems with examples concerned with life sciences or energy and the environment. Topics covered include: Chemical kinetics, thermodynamics, properties of atoms, atomic structure, and chemical bonding. In addition to lectures, there is a weekly 75 min. workshop. A 50 min. lab lecture and a 3-hour laboratory meet on alternate weeks. You must register for the lab lecture and laboratory (linked) prior to the start of the semester. Workshops are offered at multiple times during the week and assigned during the first week of classes. Lab fee: $114/billed. Uses T/Th 8-9:30am common exam time.

Offered: Spring Summer

CHM 137 CHEMICAL PRINCIPLES FOR ENGINEERS
This course is designed to give engineering students a conceptual foundation in the principles of chemistry that are relevant to solving engineering problems. Important topics include the nature of chemical compounds; stoichiometry, properties of gases; the Periodic Table; electrons and atoms; chemical bonding and applications to materials; thermodynamics and energy; rates of chemical reactions; chemical equilibrium; electrochemistry. Each unit will be discussed in the context of applications to relevant engineering problems, i.e., using chemical knowledge to design a material or process that solves an important problem. In addition to lectures there are weekly 75 min. workshops. A 75 min lab lecture and 3-hour laboratory will also be held every other week. You must register for the lab lecture and laboratory (linked) prior to the start of the semester. Workshops are offered at various times and will be assigned during the first week of classes. Lab fee: $114/billed. Uses T/Th 8-9:30am common exam time.

Offered: Fall

CHM 171 FR ORGANIC CHEMISTRY
CHM 171 / 172 is a one year exploration of the basic observations, concepts and practice of organic chemistry, with a focus on the fundamental relationships among molecular structure and chemical reactivity. The exploration will require that students grapple in depth issues: defining questions, evaluating evidence, weighing arguments, reflecting on epistemological issues, constructing new experiments, etc. The study of organic chemistry will be carefully integrated with a review of the key concepts from general chemistry. Freshman Organic is designed for first year students with good preparation in chemistry (e.g., two years of general chemistry and Advanced Placement score 4 or 5, or equivalent preparation). This sequence fast tracks students to more advanced chemistry courses and the fulfillment of degree requirements in other disciplines. Coregistration in CHM 173 (laboratory and lab/lecture) is required. Lab fee: $114 (billed). (Fall). This course uses the Tues/Thurs 8:00-9:30 am Common Exam time.

Offered: Fall

CHM 172 FRESHMAN ORGANIC CHEM II
CHM 172 is the second semester of a one year exploration of the basic observations, concepts and practice of organic chemistry, with a focus on the fundamental relationships among molecular structure and chemical reactivity. The exploration will require that students grapple in depth issues: defining questions, evaluating evidence, weighing arguments, reflecting on epistemological issues, constructing new experiments, etc. The study of organic chemistry will be carefully integrated with a review of the key concepts from general chemistry. Freshman Organic is designed for first year students with good preparation in chemistry (two years of general chemistry and an Advanced Placement score of 4 or 5). This sequence fast tracks students to more advanced chemistry courses and the fulfillment of degree requirements in other disciplines. The accompanying lab for Chemistry majors is CHM 210 (2 credits). Lab fee: $108(billed). (Spring). This course uses the Tues/Thurs 8:00 - 9:30 am Common Exam time.

Offered: Spring

CHM 172Q FRESHMAN ORGANIC CHEMISTRY II
CHM 172 is the second semester of a one year exploration of the basic observations, concepts and practice of organic chemistry, with a focus on the fundamental relationships among molecular structure and chemical reactivity. The exploration will require
that students grapple indepth issues: defining questions, evaluating evidence, weighing arguments, reflecting on epistemological
issues, constructing new experiments, etc. The study of organic chemistry will be carefully integrated with a review of the key
concepts from general chemistry. Freshman Organic is designed for first year students with good preparation in chemistry (two
years of general chemistry and an Advanced Placement score of 4 or 5). This sequence fast tracks students to more advanced
chemistry courses and the fulfillment of degree requirements in other disciplines. The accompanying lab for Chemistry majors is
CHM 210 (2 credits). Lab fee: $108 (billed). (Spring). This course uses the Tues/Thurs 8:00 - 9:30 am Common Exam time.
Offered: Spring

CHM 173 FR ORGANIC CHEM LAB
CHM 173 is the fall semester, one credit laboratory accompanying CHM 171, an exploration of the basic observations,
concepts and practice of organic chemistry, with a focus on the fundamental relationships among molecular structure and
chemical reactivity. The exploration will require that students grapple with in depth issues: defining questions, evaluating
evidence, weighing arguments, reflecting on epistemological issues, constructing new experiments, etc. The study of organic
chemistry will be carefully integrated with a review of the key concepts from general chemistry. Freshman Organic Chemistry is
designed for first year students with good preparation in chemistry (see prerequisites). Co-registration in CHM 171 (lecture) is
required. Lab fee: $108 (billed). (Fall).
Offered: Fall

CHM 203 ORGANIC CHEMISTRY
An introduction to organic chemistry that focuses on chemical bonding, structure and stereochemistry, reactions and reaction
mechanisms of organic compounds. There are three 50 minute lectures and one workshop per week. The workshop is an
informal, interactive two-hour session in which groups of eight students work on specially designed problems under the guidance
of a trained leader. The purpose of the workshop is to provide a mechanism for students to work actively with the material and
with each other. Coregistration in the one credit lab CHM 207 is required (lab fee $108 - billed). (Fall). This course uses the
Tues/Thurs 8:00 - 9:30 am Common Exam time.
Offered: Fall Summer

CHM 204 ORGANIC CHEMISTRY II
A continuation of a two-semester sequence in the study of organic chemistry. Topics covered include the reactivity of various
functional groups, approaches to organic synthesis, reactivity of conjugated systems and molecules of biological significance.
There are three 50 minute lectures and one workshop per week. Coregistration required in the accompanying laboratory course
CHM 208 or CHM 210 (2 credit lab recommended for CHM majors). Lab fee: $108 - billed. Grade of C- or better in CHM 203
(or equivalent). (Spring). This course uses the Tues/Thurs 8:00 - 9:30 am Common Exam time.
Offered: Spring Summer

CHM 207 ORGANIC CHEMISTRY I: LAB
A one credit organic chemistry laboratory course that provides an introduction to the characterization and reactivity of organic
molecules using modern laboratory techniques. There is one 3-hour laboratory and one 50 minute laboratory lecture per week.
Co-registration in CHM 203 is required. Lab fee: $108 (billed). (Fall).
Offered: Fall Summer

CHM 208 ORGANIC CHEMISTRY II: LAB
A continuation of the laboratory sequence begun in CHM 207 with two components. The one credit laboratory section meets
once each week for 2 hours and 40 minutes. In addition, the lab-lecture meets once each week for 50 minutes. Chemistry majors
should take CHM 210, a 2 credit laboratory course. Lab fee: $108 (billed). (Spring).
Offered: Spring Summer

CHM 210 ORGANIC CHEMISTRY LAB LECTURE
A 2 credit laboratory using advanced, modern experimental techniques. As part of the course, students will be trained to use the
department's NMR spectrometers. This requires extra time outside of scheduled laboratory hours (two, 3-hour laboratories and
a lab-lecture per week). This laboratory is required for chemistry majors. Lab fee: $108 (billed). Co-registration in CHM 172 or
CHM 204 is required. (Spring).
Offered: Spring
CHM 210W ORGANIC CHEMISTRY LAB LECTURE
A 2 credit laboratory using advanced, modern experimental techniques. As part of the course, students will be trained to use the department’s NMR spectrometers. This requires extra time outside of scheduled laboratory hours (two, 3-hour laboratories and a lab-lecture per week). Meets one of the required two upper level writing requirements for a chemistry major. Lab fee: $108 (billed). Co-registration in CHM 172 or CHM 204 is required. (Spring).
Offered: Spring

CHM 211 INORGANIC CHEMISTRY I
This course covers bonding in inorganic molecules, molecular symmetry, an introduction to solid-state chemistry, coordination chemistry and the properties of transition metal complexes. Two 75 minute lectures per week, 7 workshops, 6 problem sets, three midterm examinations and a final examination. Cross listed with CHM 411. (Fall).
Offered: Fall

CHM 231 CHEMICAL INSTRUMENTATION LABORATORY
This four credit course will provide an understanding of both the method and the application of modern chemical instrumentation to chemical problems and systems. The problems will be deliberately chosen to cover a range of different physical and biophysical chemistry topics. Writing clear, concise lab reports is a skill that every practicing scientist is expected to have. This course provides you with excellent opportunities to hone this important skill. Detailed lab reports are required for all computational problems and laboratory experiments. For CHM 231W, in addition to all the requirements of CHM 231, this writing section fulfills the College’s upper-level writing requirements through the completion of three additional written reports on topics in chemical instrumentation. Attendance is required at two lectures and 2 labs per week. Concurrent registration in CHM 251 is recommended. Not open to freshmen and sophomores. Lab fee: $108 (billed). (Fall).
Offered: Fall

CHM 231W CHEMICAL INSTRUMENTATION LABORATORY
This four credit course will provide an understanding of both the method and the application of modern chemical instrumentation to chemical problems and systems. The problems will be deliberately chosen to cover a range of different physical and biophysical chemistry topics. Writing clear, concise lab reports is a skill that every practicing scientist is expected to have. This course provides you with excellent opportunities to hone this important skill. Detailed lab reports are required for all computational problems and laboratory experiments. For CHM 231W, in addition to all the requirements of CHM 231, this writing section fulfills the College’s upper-level writing requirements through the completion of three additional written reports on topics in chemical instrumentation. Attendance is required at two lectures and 2 labs per week. Concurrent registration in CHM 251 is recommended. Not open to freshmen and sophomores. Lab fee: $108 (billed). (Fall).
Offered: Fall

CHM 232 MOLECULAR SPECTROSCOPY LABORATORY
A thorough study of the principles and practice of spectroscopic methods of modern physical chemistry. This is a four credit course with three lectures and one lab per week. Two exams and five laboratory reports. Course Topics: Overview, Classical view of spectroscopy Quantum view of spectroscopy, oscillator Rigid rotor and anharmonic oscillator Generation and detection of EM radiation Measurement methodology, noise, error OCS lab and Stark effect Electronic spectroscopy Basic Electronics Fine points of rovibrational spectra FTIR experiment 2 level theory, line broadening Laser induced fluorescence experiment Group theory, polyatomics, special topics Polyatomic spectroscopy/intro to Pyrene Pyrene lab instrumentation and analysis Theory of ESR spectroscopy ESR lab and instrumentation Lab fee: $108 (billed). (Spring).
Offered: Spring

CHM 232W MOLECULAR SPECTROSCOPY LABORATORY
A thorough study of the principles and practice of spectroscopic methods of modern physical chemistry. This is a four credit course with three lectures and one lab per week. Two exams and five laboratory reports. Meets one of the two required upper level writing courses for chemistry majors. Lab fee: $108 (billed). (Spring).
Offered: Spring

CHM 234 ADVANCED LABORATORY TECHNIQUES
Advanced laboratory techniques of synthesis, characterization, and analysis applied to problems in inorganic and organic chemistry. A four credit laboratory course with two or three 75-minute lectures for each lab. Labs are scheduled either Mon/Wed or Tue/Thur for approximately two-and-one-half hours each. Graded work includes five lab reports, a midterm, and two problem sets. 234W has an additional writing assignment. CHM 234W meets one of the two required upper level writing courses for the chemistry major. Lab fee: $108 (billed). (Spring).

CHM 234W ADVANCED LABORATORY TECHNIQUES

Advanced laboratory techniques of synthesis, characterization, and analysis applied to problems in inorganic and organic chemistry. A four credit laboratory course with two or three 75-minute lectures for each lab. Labs are scheduled either Mon/Wed or Tue/Thur for approximately two-and-one-half hours each. Graded work includes five lab reports, a midterm, and two problem sets. 234W has an additional writing assignment. CHM 234W meets one of the two required upper level writing courses for the chemistry major. Lab fee: $108 (billed). (Spring).

CHM 244W Advanced Nuclear Science Educational Laboratory (ANSEL)

Students enrolled in ANSEL will develop an understanding of our terrestrial radiation environment and some of the important applications of nuclear science and technology. Practical skills in the routine use of radiation detectors, monitors, and electronics. Develop the ability to assess radiation threats and prospects of their abatement. Four in-depth experiments are designed to help create a type of well-rounded, competent experimental nuclear scientist who is able to analyze an experimental problem, select, design, and set up appropriate nuclear instrumentation, and to conduct required measurements. Lab sessions will meet twice a week for two hours and 40 minutes. In addition to the lab component, students will attend a weekly lecture (50 minutes) to discuss the scientific background of the experiments and to relate principles of radiation detection and measurement to modern applications in physics, chemistry, environmental studies, power technology, medicine and forensics. (Spring, formerly CHM 245W).

CHM 251 PHYSICAL CHEMISTRY I

This course is an introduction to quantum mechanics with applications to spectroscopy and to atomic and molecular structure. There are weekly problem sets. Students also participate in workshops each week. Cross listed with CHM 441. (Fall). This course uses the Tues/Thurs 8:00 - 9:30 am Common Exam time.

CHM 252 PHYSICAL CHEMISTRY II

The course covers thermodynamics, equilibrium, statistical mechanics, solutions, and chemical kinetics. There are three 50-minute lectures and one recitation session per week. Weekly problem sets are assigned. (Spring). This course uses the Tues/Thurs 8:00 - 9:30 am Common Exam time.

CHM 262 BIOLOGICAL CHEMISTRY

An introduction to the chemical processes of life. Topics to be covered include proteins and nucleic acids, recombinant DNA technology, biological catalysis, and energy transduction. Structure and function of biological macromolecules will be emphasized. Cross listed with CHM 462. Students will not receive credit for BIO 250 AND CHM 262/462. (Spring).

CHM 275 THE CHEMISTRY OF POISONS

CHM 286 ENERGY SCIENCE TECH SCTY

Course Topics: Interdisciplinary course on contemporary energy issues, part of a “sustainability minor.” Historical development, present state and projected demands of US- American energy production and distribution within the boundary conditions of climate change and global competition. Scientific-technological knowledge of energy production and distribution technologies, energy efficiency. Strategic issues of production technologies: scalability, environmental and biological risks. Present energy
policies and prospects for sustainable energy strategies. Student research projects use published data and simulated model energy
scenarios.
Offered: Spring

**CHM 352 CHM 204/171Q LEADERSHIP**
A 2-credit course (fall; 1-credit in spring) to prepare students to be effective Workshop leaders in Chemistry courses. Topics
include: group dynamics; diversity; student development; learning theory; cognitive apprenticeship; metacognition and
constructivism. These ideas are developed and applied in the context of Workshop practice. Cross-listed as CAS352 (fall) and
CAS 355 (spring - one credit). The class meets for 1.5 hours each week in the semester in which students are leading workshops.
Readings from the research literature, class discussion and a research paper and presentation are required. Cross listed with CAS
352 (fall - 2 credits) and CAS 355 (spring - 1 credit).
Offered: Fall Spring

**CHM 386V VISITING STUDENT IN CHEMISTRY**

**CHM 390 SUPERVISED TEACHING**
Supervised teaching as prearranged with Chemistry Department faculty member. Special Application Required. Faculty rules
restrict students to one four-credit Independent Studies course per semester.
Offered: Fall Spring

**CHM 391 INDEPENDENT STUDY**
Individual study of advanced topics arranged by students. The student and instructor determine what course title is most
appropriate. The title, limited to 28 spaces, is listed on the Independent Studies Form. This title will appear on the transcript as
the official title of the course. If students do not submit a title, the course title will be determined by the number of the course
as listed above. Faculty rules restrict students to one four-credit Independent Studies course per semester. Special application
required.
Offered: Fall Spring

**CHM 393 SENIOR RESEARCH PROJECT**
Independent research directed by faculty member to be arranged during semester preceding registration. Written report and
participation in a department poster session required. For BS Chemistry majors, two semesters of CHM 393 are required (8
credits). Special application required.
Offered: Fall Spring

**CHM 393W SENIOR RESEARCH PROJECT**
Independent research directed by faculty member to be arranged during semester preceding registration. Written report and
participation in a department poster session required. For BS Chemistry majors, two semesters of CHM 393 are required (8
credits). Special application required.
Offered: Fall Spring

**CHM 394 INTERNSHIP**

**CHM 395 INDEPENDENT RESEARCH**
A research course designed by individual arrangement with a faculty member. Plan on spending at least the equivalent of two
afternoons (eight hours) a week in the lab. The basis for determining your grade for the research course is worked out between
the student and the professor as part of registration for independent research. Special application required.
Offered: Fall Spring

**CHM 395W INDEPENDENT RESEARCH**
A research course designed by individual arrangement with a faculty member. Plan on spending at least the equivalent of two
afternoons (eight hours) a week in the lab. The basis for determining your grade for the research course is worked out between
the student and the professor as part of registration for independent research. Special application required.
CHM 404 BIOPHYSICAL CHEMISTRY II
This course explores how fundamental interactions determine the structure, dynamics, and reactivity of proteins and nucleic acids. Examples are taken from the current literature with emphasis on thermodynamic, kinetic, theoretical, and site-directed mutagenesis studies. Paper and presentation. (Spring - odd years).
Offered: Spring

CHM 406 INTERFACE OF CHM & BIO
This course will provide an introduction to recent research at the interface of chemistry and biology by focusing on seminars given in various departments. Students will read and discuss selected papers from a speaker's lab during the week before the seminar, attend the seminar, and then meet with the speakers when they visit. (Spring)
Offered: Spring

CHM 411 INORGANIC CHEMISTRY I
This course covers descriptive chemistry of main group elements, bonding in inorganic systems, coordination chemistry and the properties and reactions of transition metal complexes. Two 75 minute lectures per week. Three 90 minute examinations plus group projects and problem sets. Cross listed with CHM 211.
Offered: Fall

CHM 414 BIOLOGICAL INORGANIC CHEMISTRY
Discussion of the role of metal ions in biological systems, especially enzymes. Uptake and regulation of metals, common spectroscopic techniques used for studying metals, and mechanisms through which they react. Other topics include metal ion toxicity, metal-based drugs, and interaction of metals with nucleic acids. Problem sets and proposal.
Offered: Spring

CHM 415 GROUP THEORY
2 credits - Development of symmetry and group theory concepts and scope of applications to chemical problems. Applications include molecular orbital theory, ligand field theory and spectroscopy. (Fall, 1st half of semester.)
Offered: Fall

CHM 416 X-RAY CRYSTALLOGRAPHY
2 Credits (formerly CHM 417) - Students will learn the basic principles of X-ray diffraction, symmetry, and space groups. Students will also experience the single crystal diffraction experiment, which includes crystal mounting, data collection, structure solution and refinement, and the reporting of crystallographic data. Weekly assignments: problem sets, simple lab work, or computer work. (Spring, 2nd half of semester.)
Offered: Spring

CHM 421 BASIC ORGANOMETALLIC CHEMISTRY
2 credits - Examination of the concepts, systems, reactions and applications of organometallic chemistry. Structure and bonding of complexes having carbonyl, alkyl, carbene, olefin, CnHn and related pi ligands. Oxidative addition, insertion, elimination reactions, and other fundamental reactions of organometallic compounds. (Fall, 2nd half of semester)
Offered: Fall

CHM 422 ORGANOMETALLIC CHEMISTRY
2 credits (formerly CHM 423) - Mechanisms in organometallic reactions. Applications of organometallic compounds in homogeneous catalysis, polymerization, metathesis. (Spring, 1st half of semester).
Offered: Spring

CHM 423 NMR SPECTROSCOPY
2 credits (formerly CHM 422) - An introduction to NMR spectroscopy. Collection, processing, and interpretation of homonuclear and heteronuclear 1D and multidimensional spectra will be covered. Topics to be discussed include chemical shifts, relaxation, and exchange phenomena. Examples from organic, inorganic, and biological chemistry will be used. (Fall, 1st half of semester).
Offered: Fall

**CHM 425** Physical Methods in Inorganic Chemistry
Molecular and electronic structure determination of inorganic compounds and metal complexes; spectroscopic and physical methods that are used in inorganic chemistry. The main focus will be practical rather than theoretical. The course will culminate in a project that combines techniques to answer questions about coordination complexes. (Spring semester, 4 credits)
Offered: Spring

**CHM 426 PHYS MTHDS IN INORGNC CHM**
A continuation of CHM 425. The modern methods and tools employed for the determination of the structure of complex organic molecules will be discussed. Among the areas discussed are basic NMR, IR, UV and mass spectroscopy. Problem solving techniques will be illustrated and problem solving skills developed by means of problem sets and class examples. (2 credits, Spring, 1st half semester).
Offered: Spring

**CHM 427 ORGANIC STRUCTURE DETERMINATION**
2 credits (formerly CHM 426). The modern methods and tools employed for the determination of the structure of complex organic molecules will be discussed. Among the areas discussed are basic NMR, IR, UV and mass spectroscopy. Problem solving techniques will be illustrated and problem solving skills developed by means of problem sets and class examples. (Fall, 2nd half of semester).
Offered: Fall

**CHM 433 ADVANCED PHYSICAL ORGANIC CHEMISTRY I**
An understanding of the structure and reactivity of organic compounds by using molecular orbital theory will be provided. Some perspectives on the relationships between structure, mechanism and reactivity will be discussed in the context of a number of fundamental concepts and principles, such as molecular orbital theory, frontier molecular orbital theory, stereochemistry, conformational analysis, stereoelectronic effects, thermodynamics and equilibria, kinetics, linear free-energy relationships, acids and bases catalysis, nonclassical ions, and concerted pericyclic reactions. Not open to freshmen and sophomores. (Fall).
Offered: Fall

**CHM 434 ADVANCED PHYSICAL ORGANIC CHEMISTRY II**
Structure and reactivity; kinetic, catalysis, medium effects, transition state theory, kinetic isotope effects, photochemistry, reactive intermediates, and mechanisms. Readings in text ("Determination of Organic Reaction Mechanisms," B.K. Carpenter); Problem sets (about four during the semester). Two 75 minutes lectures per week. (Spring).
Offered: Spring

**CHM 435 ORGANIC REACTIONS**
A survey of reactions of organic compounds with emphasis on those with practical synthetic utility will be provided. Mechanisms of reactions will be considered as well as their scope and limitations. Stereochemical and stereoelectronic issues will be discussed. Selected topics to be covered are conformational analysis, olefin addition reactions, oxidation and reduction methods, pericyclic reactions, chemistry of enolates and metalloenamines, organosilicon chemistry, chemistry of nitrogen- and sulfur-based functional groups, chemistry of reactive intermediates, such as carbocations and carbenes. A solid background of college organic chemistry, including a good knowledge of reaction mechanisms, will be assumed as a prerequisite. Two 75-minute lectures per week with extensive reading assignments from original literature. (Fall).
Offered: Fall

**CHM 436 AP ORGANOMETALLIC CHM TO SYNTHESIS**
2 credits - The transition metal mediated organometallic reactions most commonly employed in organic synthesis will be discussed including their substrate scope, mechanism, and stereo- and/or regiochemical course. Emphasis will be placed on the
practical aspects such as catalyst and reaction condition selection, and protocols for trouble shooting catalytic cycles. (Spring, 1st of half semester).

Offered: Spring

CHM 437 SYN DESIGN:STRATEGY&TACTICS
(Formerly CHM 437) - An introduction to bioorganic chemistry and chemical biology. The course will present a survey of how the principles of organic chemistry have been applied to understand and exploit biological phenomena and address fundamental questions in life sciences. The course is primarily based upon the primary literature. Covered topics include the design and mechanism of enzyme mimics and small molecule catalysts (organocatalysts), synthesis and chemical modification of biomolecules (oligonucleotides, proteins, oligosaccharides), design and application of oligonucleotide and peptide mimetics, and chemical approaches to proteomic and genetic analyses. Not open to freshmen and sophomores.

Offered: Spring

CHM 438 Synthetic Design: Strategy and Tactics
2 credits - A formalism describing commonly employed strategies and tactics for the analysis of complex problems in organic synthesis will be presented. Examples of such strategies will be compared and contrasted during discussion of published complex molecule syntheses. Two, 75 minute lectures per week. (Fall, 1st half of semester).

Offered: Fall

CHM 440 BIO ORGANIC CHEMISTRY
(Formerly CHM 437) - An introduction to bioorganic chemistry and chemical biology. The course will present a survey of how the principles of organic chemistry have been applied to understand and exploit biological phenomena and address fundamental questions in life sciences. The course is primarily based upon the primary literature. Covered topics include the design and mechanism of enzyme mimics and small molecule catalysts (organocatalysts), synthesis and chemical modification of biomolecules (oligonucleotides, proteins, oligosaccharides), design and application of oligonucleotide and peptide mimetics, and chemical approaches to proteomic and genetic analyses. Not open to freshmen and sophomores.

Offered: Spring

CHM 441 PHYSICAL CHEMISTRY I
This course is an introduction to quantum mechanics with applications to spectroscopy and to atomic and molecular structure. There are weekly problem sets. Students also participate in workshops each week. Cross listed with CHM 251. (Fall).

Offered: Fall

CHM 444 Advanced Nuclear Science Educational Laboratory (ANSEL)
Students enrolled in ANSEL will develop a sophisticated understanding of our terrestrial radiation environment and of some of the important applications of nuclear science and technology. They will acquire practical skills in the routine use of radiation detectors, monitors, and electronics, and develop the ability to assess radiation threats and prospects of their abatement. The four in-depth ANSEL experiments are designed to help recreate a type of well-rounded, competent experimental nuclear scientist who is able to analyze an experimental problem, to select, design, and set up appropriate nuclear instrumentation, and to conduct required measurements. Laboratory sessions will meet twice a week for 2 hours and 40 minutes. In addition to the laboratory component of ANSEL students will attend a weekly lecture (1 hour and 15 minutes per week) to discuss the scientific background of the experiments and to relate principles of radiation detection and measurement. (Formerly CHM 445W)

Offered: Spring

CHM 451 QUANTUM CHEMISTRY I
Basic quantum chemistry, Schroedinger equation, basic postulates of quantum mechanics, angular momentum, perturbation theory, and molecular structure. (Fall).

Offered: Fall

CHM 455 THERMODYNAMICS & STATISTICAL MECHANICS
The course draws connections between the orderly and chaotic behavior of simple and complex systems, laying the foundations of statistical equilibrium and equilibrium thermodynamics. The different phases of matter (gases, liquids, solid) assumed by bulk classical interacting particles and their transitions are discussed in this approximation. Properties of non-interacting quantal
systems are expressed in terms of partition functions, for gases of simple and complex particles. Non-equilibrium statistical behavior of multi-particle systems leads to diffusion and other transport phenomena. Reading assignments and homework. Two weekly lectures of 75 minutes. Cross listed with CHE 455.

Offered: Fall

CHM 456 Chemical Bonds: From Molecules to Materials
An introduction to the electronic structure of extended materials systems from both a chemical bonding and a condensed matter physics perspective. The course will discuss materials of all length scales from individual molecules to macroscopic three-dimensional crystals, but will focus on zero, one, and two dimensional inorganic materials at the nanometer scale. Specific topics include semiconductor nanocrystals, quantum wires, carbon nanotubes, and conjugated polymers. Two weekly lectures of 75 minutes each. Cross listed with OPT 429. (Spring).

Offered: Spring

CHM 458 MOLECULAR SPECTROSCOPY
This 2 credit course covers the basic theory and experimental practice of spectroscopy in molecules and condensed matter. A general review of electromagnetic waves is followed by time dependent perturbation theory and a density matrix treatment of two-level systems. The basic principles are applied electronic, vibrational and rotational spectroscopy. The course draws heavily on literature studies that exemplify the material.

Offered: Spring

CHM 460 CHEMICAL KINETICS
2 credits - Within the broad area of chemical kinetics, this course will focus on basic concepts of kinetics, photochemistry and electron-transfer (eT). In addition to studying bulk reaction rates, we will discuss Marcus's theory of eT, intramolecular vibrational energy redistribution (IVR) and vibrational cooling, and the fates of photoexcited species (radiative and non-radiative decay channels). We will address the experimental quantification of these kinetics using time-resolved spectroscopy and analysis of kinetic data. The course material will be somewhat continuous with that of CHM 458, Molecular Spectroscopy. (Spring, 2nd half of semester.)

Offered: Spring

CHM 462 BIOLOGICAL CHEMISTRY
An introduction to the chemical processes of life. Topics to be covered include proteins and nucleic acids, recombinant DNA technology, biological catalysis, and energy transduction. Structure and function of biological macromolecules will be emphasized. Cross listed with CHM 262. Students will not receive credit for BIO 250 AND CHM 262/462. (Spring).

Offered: Spring

CHM 469 COMPUTATIONAL CHEMISTRY

CHM 475 THE CHEMISTRY OF POISONS

CHM 476 POLYMER SYNTHESIS

CHM 486 ENERGY SCIENCE TECH SCTY
Course Topics: Interdisciplinary course on contemporary energy issues, part of a “sustainability minor.” Historical development, present state and projected demands of US- American energy production and distribution within the boundary conditions of climate change and global competition. Scientific-technological knowledge of energy production and distribution technologies, energy efficiency. Strategic issues of production technologies: scalability, environmental and biological risks. Present energy policies and prospects for sustainable energy strategies. Student research projects use published data and simulated model energy scenarios.

Offered: Spring

CHM 489 BIOSENSORS

CHM 491 MASTER'S READINGS IN CHEM
CHM 493 MASTER'S ESSAY

CHM 495 MASTER'S RESEARCH

CHM 511 CHEMISTRY SEMINAR
Offered: Fall Spring

CHM 513 CHEMISTRY COLLOQUIUM

CHM 516 COORDINATION CHEMISTRY
This course will give an in-depth survey of topics in coordination chemistry. It will be structured around a molecular-orbital model, which helps us to understand structures, dynamics, and reactivity. The tests will be “open-book,” to simulate the situation that real chemists face when solving problems. In all assignments, logical and persuasive reasoning will be valued most highly in grading. (2 credits, Spring, 2nd half semester)
Offered: Spring

CHM 518 KINETICS IN ORGANO METAL LIC
This course will cover the use of kinetic techniques for the elucidation of the mechanisms of organometallic reactions. Each class will focus on an article from the literature where a specific kinetic technique has been employed to investigate a system. About 12 such articles will form the basis for the discussions. (2 credits, Spring, 2nd half of semester)
Offered: Spring

CHM 566 NUCLEAR SCIENCE & TECH II
The course covers a limited number of specific topics in nuclear science and technology, but in more in depth than the introductory course (NST I). A sample set of theoretical and applied topics discussed in the course contains 1. Theoretical models of direct reactions, 2. Nuclear astrophysics in observation and simulation, 3. Statistical model predictions for stability and disintegration modes of excited nuclei, 4. Computational nuclear science. Several modern nuclear science textbooks and additional compilations of relevant science are used as reference and guidance. Assignments include regular homework problem sets and generation/modification of simulation computer codes. One meeting per week. (Offered in Spring - Odd Years)
Offered: Spring

CHM 583 ADV CHEMISTRY SEM & COLLOQUIUM

CHM 585 1ST YR GRADUATE WORKSHOP
Offered: Fall Spring

CHM 591 PHD READINGS IN CHEMISTRY

CHM 593 SPECIAL TOPICS IN CHEMISTRY

CHM 594 INTERNSHIP

CHM 595 PHD RESEARCH IN CHEMISTRY

CHM 595A PHD RESEARCH IN ABSEN TIA

CHM 895 CONT OF MASTER'S ENROLLMENT

CHM 897 MASTER'S DISSERTATION

CHM 899 MASTER'S DISSERTATION

CHM 985 LEAVE OF ABSENCE
CHM 986V FULL TIME VISITING STUDENT

CHM 995 CONT OF DOCTORAL ENROLLMENT

CHM 997 DOCTORAL DISSERTATION

CHM 997A DOCT DISSERTATN IN ABSENTIA

CHM 999 DOCTORAL DISSERTATION

CHM 999A DOCT DISSERTATN IN ABSENTIA

CLA 102 CULTURAL HISTORY OF ANCIENT GREECE
Survey the military, political, and social history of ancient Greece from the Bronze Age to the death of Alexander.

CLA 115 ROMAN WORLD
An examination of the history of Rome. Over the course of a few hundred years, Rome grew from a small village into the capital city of one of the world’s greatest empires. How did a small town in central Italy succeed in imposing its government and cultural values throughout the Mediterranean world and beyond? And why did the Roman political and cultural system ultimately fail? Why do ancient Roman values and accomplishments still resonate with us so much today? Throughout this class, these are some of the questions we will attempt to answer.
Offered: Fall

CLA 135 CLASSICAL MYTHOLOGY
Introduction to the mythology of the classical world. We will examine the major myths about the gods, the origins and nature of the universe, and the heroic past, as they developed in the Greek world and as they were adapted in the Roman world. We will consider the nature and function of myth in society, some theoretical approaches to myth, and the way in which myths were adapted by Greek and Roman authors to fit a particular literary or historical context. This course will also devote time to comparing the classical system of myths to other mythological systems.
Offered: Spring

CLA 140 CLASSICAL & SCRIPTURAL BACKGROUND
The great tradition, from Homer, Greek drama, Plato, and Virgil to the Bible and Dante.

CLA 200 INTRODUCTION TO ARCHAEOLOGY
This course introduces the student to the field of archaeology through three units of study: 1) The history of excavation from ancient to modern times, 2) The techniques of excavation and the analysis of material remains, 3) Modern theories of cultural interpretation of archaeological sites.

CLA 202 EROS & MADNESS IN PLATO
A careful and thorough line by line study of Plato's PHAEDRUS and SYMPOSIUM with a view to understanding each dialogue in itself and Plato's philosophic art of poetic composition. Some major themes in Plato will be intensively explored, such as The Soul and its parts, the immortality of The Soul, the nature of learning, Eros and philosophic passion, and others. Mostly discussion.
Offered: Spring

CLA 204W BLDG ENG & SOCIETY CLSCLANT
Explores the relationship between, on the one hand, building practices, engineering and technological advances and, on the other hand, social practices in ancient Greece and Rome.

CLA 209 ANCIENT ROMAN RELIGION
This course explores the religion of the ancient Romans from the time of the founding of the city of Rome in the eighth century BC to the end of the Roman imperial period in the fifth century AD.
CLA 210 JUDAISM IN THE ANCIENT WORLD

CLA 214 THE ANCIENT CITY
Urbanism in the ancient Mediterranean world. Survey of the rise of cities in the Near East and Egypt and detailed study of the cities and colonies of ancient Greece and the Roman Empire, using the evidence of archaeological remains.

CLA 215 GREEK DRAMA
A survey course, in English, of the major periods in Greek drama, from its origins to the Hellenistic period. Will include discussion of social, political, and literary context within which drama developed.

CLA 216 ANCIENT EPIC
Close readings of the Iliad, the Odyssey, and the Aeneid will be supplemented by critical texts that examine the tremendous social and civic import of epic in antiquity and the broader cultural contexts in which the genre flourished. The significance of the epic singer, the distinction between oral and written compositional techniques, and notions of gender, class, and empire in the ancient world will be topics of investigation that inform our reading of the epic texts.

CLA 218 ANCIENT MEDICINE

CLA 219 GREEK TRAGEDY
Students in this course will read the works of Aeschylus, Sophocles and Euripides in order to examine the religious practices, political intrigues, social lives and ethics of the ancient Athenians. No previous knowledge of Greek history or language is required.

CLA 220 CLASSICAL ARCHAEOLOGY: GREEK ART & ARCHAEOLOGY
This course examines the physical remains of ancient Greek civilization, with an emphasis on architecture, sculpture, painting, and other visual arts, in order to understand Greek culture and society.
Offered: Spring

CLA 220W CLASSICAL ARCHAEOLOGY: GREEK ART & ARCHAEOLOGY

CLA 221 CLASSICAL ARCHAEOLOGY: ROMAN ART & ARCHAEOLOGY
An examination of the physical remains of ancient Roman civilization, with an emphasis on architecture, sculpture, painting, and other visual arts, in order to understand Roman culture and society.
Offered: Fall

CLA 221W CLASSICAL ARCHAEOLOGY: ROMAN ART & ARCHAEOLOGY

CLA 223 (AREZZO) IT MONUMENTS

CLA 224 SACRED SPACES IN GREECE

CLA 228 BODY IN EARLY CHRISTIANITY

CLA 235 THEORIES OF MYTH

CLA 235W THEORIES OF MYTH

CLA 299 FIELD METHODS IN ARCHAEOLOGY
In this course, taught on site at an archaeological excavation, students receive instruction and hands-on training in archaeological field and laboratory work, including remote sensing in archaeology, on-site surveying, excavation techniques, field documentation, and artifact identification and processing.
Offered: Summer
CLA 301 ANCIENT ROMAN AQUED.-AREZZO

CLA 390 SUPERVISED TEACHING

CLA 391 INDEPENDENT STUDY

CLA 391W INDEPENDENT STUDY

CLA 392 HONORS RESEARCH

CLA 393 SENIOR PROJECT

CLA 393W SENIOR PROJECT

CLA 394 INTERNSHIP

CLA 491 MASTER'S READING COURSE

CLT 101C DISABILITY STUDIES: RETHINKING DIFFERENCE & DIVERSITY
People with disabilities constitute the world’s largest, most stigmatized, and most marginalized “minority,” and yet many of us don’t include this identity in our thinking when we speak of and celebrate human diversity and inclusion. The field of disability studies has, since the 1980s, examined and theorized the complex meanings of disability throughout history. Work by DS scholars offers insights into disability identities as both embodied realities, and social and cultural constructions. This course will provide an introduction to disability studies, and an exploration of the literary representations of physical, intellectual and psychosocial disability in works chosen from a variety of national traditions. Reading journal, short essays, research paper.

CLT 101D MEXICO, DF: GLOBAL METROPOLIS
Called by some “the capital of the 221st century,” Greater Mexico City is inhabited by close to 20 million people. The Distrito Federal (DF) and capital of Mexico is today the largest metropolitlan area in the western hemisphere and third largest city in the world by population. Established by the Spanish in 1524 on the ruins of the Aztec city Tenochtitlán they had destroyed, Mexico City is a global center of finance, culture, and industry. This course examines the development of this vibrant megalopolis over the 20th and 21st centuries using literature, film, politics, tourism, music and the arts, cultural geography, architectural space, and essays by urban wanderers to try and get a handle on a space that seems to contradict itself at every turn.

CLT 101E Censorship
This course will examine the concept of censorship as well as its application throughout history. Examples will be taken from the literature, film, art (among others) of different cultural traditions and from a variety of historical contexts. We will explore the logistics of controlling material that is considered unsuitable for public consumption as well as the implications of the desire and attempts to control knowledge and freedom of expression. Students will be exposed to some controversial materials throughout the semester.

CLT 101I COWBOYS & INDIANS
What makes a Western a Western? Is it cowboys and Indians and vistas of the American West? Is a Western if tough guy Clint Eastwood stars in a film by an Italian director shot in Spain? Or if a German who had never been to the United States writes about the heroic Indian Winnetou and the film versions of the novels are shot in Eastern Europe? This course will explore the myth of the American West in film and literature, including Westerns from Germany, Asia, and of course, the US. Texts and discussions will be in English.

CLT 101M BERLIN: TALES OF A CITY
Who or what defines a city? Do architecture, cultural productions and politics distinguish it, or is it characterized by the banal activities at work, in the home, or in the public gardens? In this course we will encounter Berlin in the visual arts, literature, and film, as well as in historical and philosophical texts. Questions of gender, class, race and sexuality will enable us to approach the city from various perspective so as to better understand it as both a site of and metaphor for artistic production, philosophical
reflection, political engagement and banal existence. All readings and discussions in ENGLISH. Freshmen and sophomores especially encouraged.

**CLT 101V POWERS OF IMAGES**
It’s a truism that we live in a world saturated with images, but anxieties over images are hardly unique to our own time. Images have been ongoing subjects of reflection for centuries, while the stories literary texts tell about images are particularly revealing of beliefs in the powers and limits of both writing and visual images, and of the ways in which such beliefs are almost invariably intertwined with questions of knowledge and power, the borders of life and death, and the politics of gender, history, and culture. In this course, we will examine how literature from China, Japan, Turkey, and the West explores such questions of images. We will track how understandings of the powers of images change, persist, and are re-appropriated across historical time and cultural space, and consider the critical light “premodern” texts and texts from our “modern” world of images can project upon each other.

**CLT 110 JUSTICE AND EQUALITY**

**CLT 111 INTRO TO PREMODERN CHI LIT**

**CLT 117Q DANTE’S DIVINE COMEDY II**
The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from literature to history, from politics to government, from philosophy to theology. Class format includes lectures and discussion. Intensive class participation is encouraged. No prerequisites.

**CLT 118 DANTE ALIGHIERI**

**CLT 118Q DIVINE COMEDY OF DANTE ALIGHIERI**
The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from literature to history, from politics to government, from philosophy to theology. Class format includes lectures and discussion. Intensive class participation is encouraged. No prerequisites.

**CLT 151 MODERN LATIN AMERICA**

**CLT 160 THE NEW EUROPE: FORMATIONS & TRANSFORMATIONS**

**CLT 161 EUROPE TODAY**

**CLT 201A INTRO TO PREMODERN CHI LIT**

**CLT 202B HOLOCAUST IN FILM & LIT**

**CLT 203 POLISH AND AMERICAN POETRY**

**CLT 204 MODERN JAPAN**

**CLT 207C History—Italy from Napoleon to the First Republic (1796-1948): History & Historical Imagination**
The Italian peninsula has a history that goes back at least 2500 years. But the state of Italy, founded in 1861, is younger than the United States. At the intersection of these two facts lies the main theme of our journey from the Napoleonic invasion of Italy to the approval of the constitution of the Republic of Italy: the difficulty faced by the political leaders of united Italy in getting its
citizens to identify with the Italian state. Historical accounts and documents, integrated with a selection of literary, operatic, and cinematic materials, constitute the main sources of information and analysis.

**CLT 208A** TRAD JAPANESE CULTURE
An overview of Japan’s traditional culture through the most prominent examples of its visual, literary, and performing arts, with attention to the social contexts of aesthetic experience and to ideas of a “national culture.” Taught in English, additional work available in Japanese where appropriate.

**CLT 208C** CONTEMPORARY JPN CULTURE

**CLT 209A** RUSSIAN CIVILIZATION

**CLT 209B** RUSSIAN IDENTITY

**CLT 210C** CHINESE LANDSCAPES

**CLT 211B** FRENCH CINEMA: THE NEW WAVE

**CLT 211C** HISTORY OF FRENCH CINEMA

**CLT 211F** CLASSICAL FILM THEORY

**CLT 211G** FEMINIST FILM THEORY

**CLT 211M** FRENCH IN FILM

**CLT 212C** WOMEN IN GERMAN CINEMA
In this course we will explore representations of women in post-World War II German cinema. Moving chronologically from the building of two German states to the post-unification period, we will consider the constantly shifting meaning of woman in popular and avant-garde films, narrative and documentary films, films by both male and female directors. We will consider equally films from East and West Germany. How does woman function as a narrative device in these films? Do women behind the camera change, woman’s meaning within the film? Can woman consistently be reduced to one narrative trope (mother, comrade or whore), or does she resist? All readings and discussions are in English; all films are subtitled.

**CLT 212I** CINEMA & REVOLUTION
This course will explore the relationship between film and revolution in West German cinema from 1965 to the present. We will consider cinema’s potential as a revolutionary medium, while also focusing on how revolution is thematized and constructed in both fiction and documentary films. The course will engage with issues such as coming to terms with the fascist past, recreating the cinema as a revolutionary artistic form, feminism as a revolutionary perspective, the domestic sphere as a revolutionary space, and the co-optation of the cinemas revolutionary potential through mass consumption.

**CLT 212M** HOLLYWOOD BEHIND THE WALL
This course will explore major developments in the East German cinema, including issues such as coming to terms with the fascist past, popular film making and art cinema, cinema as a pedagogical tool, artistic dissent and state censorship, socialist ideologies of gender, and the politics of documentary. Each film will be explored in relation to its socio-historical context, providing students with an overview of East German film and culture.

**CLT 213B** MODERN ITALY THRU FILM

**CLT 214** DREAM OF THE RED CHAMBER

**CLT 214A** TOURIST JAPAN

**CLT 214C** AKIRA KUROSAWA
CLT 214M ATOMIC CREATURES: GODZILLA
Origins and development of the Japanese kaiju eiga (monster film): nuclear imagery and the science fiction/horror/creature film genre.

CLT 214N TOURIST JAPAN

CLT 215A RUSSIA GOES TO MOVIES
In Russia, the dawning of the age of movies coincided with the birth of the Soviet state. According to Lenin, the most revolutionary of the arts was also to be the art of the Revolution. Yet Soviet directors, from Eisenstein to Tarkovsky, were also among the world’s most influential filmmakers. This class looks at these artistically interesting and popular films while exploring the changing relationship between politics, experimentation, and entertainment in Russian cinema, always mindful of the backdrop of totalitarian society and the nature of mass culture in general. Topics include Innovation and Ideology; From Hollywood to High Stalinism; Popular Patriotism; The Thaw in Cinema after Stalin’s Death; From High Hopes to Stagnation (the sixties and seventies); The Last Days of Soviet Film and the New Russian Cinema. No knowledge of Russian required. Attendance at weekly screenings is mandatory.

CLT 216A MEXICAN FILM

CLT 216B SPANISH FILM

CLT 217 Men of Marble, Women of Steel: An Introduction to East European Film
This course will provide a general introduction to the history, artistry and politics of East European film. We will begin by considering the place of East European film in the context of contemporary film studies and the industry structure of state socialist film making. We will then explore individual films from a regional (not national) perspective, considering how they confront issues such as the burden of history and ethics, the tensions between modernity and tradition, the struggle between creativity and censorship, as well as the reluctant feminism of state socialism and representations of gender and sexuality.

CLT 217B RACE & GENDER IN POP FILM

CLT 218 FILM HISTORY: 1929-1959

CLT 220 ARCH OF PERU

CLT 222B GENDER & SEX IN 20TH CENTURY
This course will examine literary, artistic, and theoretical representations of gender and sexuality as they have changed in the course of the 20 Century. The focus will be on texts from Western Europe and the US, but we will also consider other perspectives. From the New Women to French Feminists and transnational feminism, from homophile societies to “queer nation and gay marriage, from Sigmund Freud to Michel Foucault and Judith Butler, we will explore the contested and politically charged debates around gender and sexuality that have shaped our views of identity over the last century.

CLT 223 GERMAN THINKERS

CLT 224B MODERN JPN WOMEN WRITERS

CLT 227 BODY POLITICS IN JPN CULTURE

CLT 228 ITALY NAPOLEON-FIRST REPUBLC

CLT 229 COLONIAL LATIN AMERICAN LIT

CLT 230 FILM AS OBJECT

CLT 230A FRENCH SOCIAL THOUGHT
This course examines the singular contribution of French thinkers to the development of the social sciences (or the “sciences of man,” as they are known in France) in the twentieth century. We will examine the theory of gift exchange in Marcel Mauss, the rise of structural anthropology in Claude Lévi-Strauss, the sociology of Pierre Bourdieu, and the theories of religion and culture of René Girard and Marcel Gauchet. We will also study post-structuralist thinkers such as Jacques Derrida and Jean-Luc Nancy when their work touches on issues of society and religion. Taught in English.

**CLT 231B MADNESS & POST COLONIAL LITERATURE**

This course will explore inscriptions of madness in post-colonial African and Caribbean texts. Beyond the obvious and visible signs of what is generally termed "madness" (from the pathological to the political or cultural), we will ask ourselves if the postcolonial arena cannot be interpreted as a pervasive manifestation of madness, that is to say, of something fundamentally "alien, foreign" to the Known, to the imperial destructuring order, and to the disarticulated colonial and post-independent communities. By bringing together texts from different and diverse cultural and intellectual areas such as France, Guadeloupe, and Africa, we seek to confront the various "scriptures.” Issues of witch-hunt, of disintegration of Juletane, the Antillean women in West Africa, from Foucault's normative panopticism to Fanon's discussion of the black experience, the postcolonial situation, articulated or silenced, will be the focus of this course. Taught in English.

**CLT 231E BLACK PARIS**

This course is a study of Black Paris, as imagined by three generations of Black cultural producers from the United States, the Caribbean and Africa. Paris is as a space of freedom and artistic glory that African American writers, solders and artists were denied back home. For colonized fricans, and Antilleans, Paris was the birthace of the Negritude, the cultural renaissance informed by the dreams and teachings of the Harlem Renaissance. Black Paris, for the young generations caught in the marginal space of poor suburbs, calls to mind images of burning cars, riots, dilapidated schools that are rendered through rap music, hip-hop that are weaving the thread of a new youth-oriented transnational imagination.

**CLT 232 JEWISH WRITERS AND REBELS**

**CLT 235 TEXTS BEYOND BORDERS**

**CLT 239 REPRESENTING AFR-AMERICANS**

**CLT 241 CARIBBEAN NOVEL & THEORY**

**CLT 244A TOPICS IN ITALIAN CULTURE**

**CLT 244B TOPICS IN ITALIAN CULTURE**

**CLT 247 PLTCS & CLTR IN FASCIST IT**

**CLT 250 NABOKOV**

**CLT 251 STRANGERS IN A STRANGE LAND**

**CLT 252 BRIGHT LIGHTS, BIG CITY**

The city in film and literature is never just a physical space - discourses of modernity and urban life are mapped onto real and imagines urban spaces. In this course we will explore how the relationship between the spaces of the city and the stories told about and through them shape our understanding of urban life. Some of the texts we will examine are: Fritz Lang’s M, Arthur Schnitzler’s Dream Story, and Lloyd Bacon’s 42nd Street.

**CLT 252A KAFKA & HIS WORLD**

This course explores the weird, dreamlike, eerie, and inexplicable world of Kafka’s writings. In Kafka’s stories dogs conduct investigations, apes report to academies, men turn into bugs, the Statue of Liberty holds up a sword, and arrests occur without explanation as all expectations and assurances about the “rules” of existence, thought, and social order come into question. In this course we will read texts such as: The Trial, The Metamorphosis, Amerika, The Castle, Investigations of a Dog, A Report to an Academy, In the Penal Colony, and A Hunger Artist. This course is taught in English.
CLT 253B BOCCACCIO'S DECAMERON

CLT 253D DANTE'S DIVINE COMEDY II
The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from literature to history, from politics to government, from philosophy to theology. Class format includes lectures and discussion. Intensive class participation is encouraged. No prerequisites.

CLT 253F DIVINE COMEDY OF DANTE ALIGHIERI
The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from literature to history, from politics to government, from philosophy to theology. Class format includes lectures and discussion. Intensive class participation is encouraged. No prerequisites.

CLT 254 VISUALIZING DANTE

CLT 255A GREAT RUSSIAN WRITERS

CLT 255C CHEKHOV & SHORT STORY

CLT 255D DOSTOEVSKY

CLT 256 GERMANY YEAR ZERO

CLT 256B DON QUIXOTE
This course entails a close reading of the novel in English trtanslation, coupled with a focus on the ways in which both the novel and/or protagonist have been adapted, adopted, interpreted or incorporated by various critical and popular traditions both inside and outside of Spain from the time of its original publication in 1605 through the 21st century. We will examine several filmic adaptations, illustrations and paintings as well, with an eye toward critically examining the problematic employment of Don Quixote as an icon of Pan-Hispanic culture. However, we will continually return to the novel as our anchor throughout the course, while assessing the constantly changing ways in which contemporary readers and scholars appoach the text. Course is taught in English. *Students taking the course for Spanish credit will do the bulk of the work in Spanish

CLT 257A THE ARABIAN NIGHTS

CLT 258 MIDDLE EASTERN CINEMA

CLT 259 TOLSTOY'S WAR & PEACE

CLT 260 TRUTH & POWER

CLT 261 PHILOSOPHY OF ART

CLT 264A THE CULTURE OF ZEN

CLT 265 RUSSIAN DRAMA

CLT 265B RUSSIA GOES TO MOVIES

CLT 265D RUSSIAN LIT BTWN REVS
CLT 270 RELIGION & JAPANESE CULTR
CLT 272 FASSBINDER
CLT 273 FRENCH CINEMA 1930-1960
CLT 275 FRENCH PHILOSOPHY SINCE 1960
CLT 276 20TH CENT EUROPEAN THOUGHT
CLT 277 MODERN JPN LIT IN TRANS
CLT 278 JAPANESE POPULAR CULTURE
CLT 279 IMMIGRATION IN LIT AND FILM
CLT 280 AESTHETICS

CLT 282A MARX & MARXISM
It is not overstated to say that the works of Karl Marx have provided the transformational impulse to many of the changes of the 20th century. Who was this person, Karl Marx? Why is it that in this post-Cold War world his writings continue both to inspire and threaten contemporary readers? How have those inspired by Marx further developed his ideas to constitute the discourse of Marxism? In this course we will begin with discussions of key works by Marx. We will then move on to examine some significant contributions to Marxism. Additionally majors and minors can sign up for GER 211 where significant texts will be read and discussed in German.

CLT 282B NIETZSCHE & NIETZSCHEANS
Friedrich Nietzsche continues to be one of the most influential modern philosophers, yet controversy surrounds almost every aspect of his life and work. This course will help students go beyond the controversy in order to consider Nietzsche's texts discerningly and how he approached the problems of truth, power, and morality. Close examination of his most important writings will be complemented by inquiry into Nietzsche's effects on twentieth-century philosophy. Other thinkers include Martin Heidegger, Michel Foucault, Sarah Kofman, Jacques Derrida and Giles Deleuze.

CLT 283 SARTRE & HEIDEGGER
This course studies two of the most influential works in twentieth-century philosophy: Martin Heidegger's Being and Time (1927) and Jean-Paul Sartre's Being and Nothingness (1943). Together these two books defined existential phenomenology and changed the course of philosophy, exerting a profound influence over later writers and thinkers. Since both philosophers sought to fundamentally redefine human subjectivity—its place in society, history, and the philosophical tradition—we will examine concepts such as freedom, reality, temporality, subjectivity, death, emotion, and the relation between self and other. We will also compare Sartre's insights with those of Heidegger, particularly in regard to the concept of humanism, juxtaposing Sartre's famous manifesto ¿Existentialism is a Humanism¿ (1946) with Heidegger's critique of Sartre and French existentialism in his ¿Letter on Humanism¿ (1947).

CLT 284 TRANSLATION&WORLD LITERATURE
The focus of World Literature in Translation is to examine what makes a translation "successful" as a translation. By reading a series of recently translated works (some contemporary, some retranslations of modern classics), and by talking with translators, we will have the opportunity to discuss both specific and general issues that come up while translating a given text. Young translators will be exposed to a lot of practical advice throughout this class, helping to refine their approach to their own translations, and will expand their understanding of various practices and possibilities for the art and craft of literary translation.

CLT 286 NEW AUSTRIAN CINEMA

CLT 287 STUDIES IN TRANSLATION
CLT 288 WOMEN IN GERMAN CINEMA

CLT 291 WEIMAR CULTURE

CLT 292 PHOTO IN SP & SP AMERICA

CLT 294 ON GENEALOGY

CLT 389 MAJOR SEMINAR
CLT 389 is an introduction to theories and critical approaches as strategies for reading and interpreting texts, films, and other cultural objects. Students in this course will read a variety of literature and theory with an eye toward understanding what criticism's roles are, why and how the study of literature and culture (still) matters, and how they can develop their own critical skills based on their personal interests and concerns. This course teaches reading strategies that will help students to get to the heart of what they are studying, and very significant amounts of course work will be devoted to the art of writing the literary essay. How do you choose a thesis, what methods of investigation do you employ, and how do you synthesize your analysis? Required of all Majors in MLC, this course is also open to students with a Minor in an MLC discipline, or by permission of the Instructor.

CLT 390 SUPERVISED TEACHING

CLT 391 INDEPENDENT STUDY

CLT 393 SENIOR PROJECT

CLT 394 INTERNSHIP

CLT 395 HONORS SEMINAR

CLT 403 POLISH AND AMERICAN POETRY

CLT 408A TRAD JAPANESE CULTURE
An overview of Japan’s traditional culture through the most prominent examples of its visual, literary, and performing arts, with attention to the social contexts of aesthetic experience and to ideas of a “national culture.” Taught in English, additional work available in Japanese where appropriate.

CLT 408C CONTEMPORARY JPN CULTURE

CLT 409 ON GENEALOGY

CLT 411B FRENCH CINEMA: THE NEW WAVE

CLT 411C HISTORY OF FRENCH CINEMA

CLT 411F CLASSICAL FILM THEORY

CLT 411M FRENCH IN FILM

CLT 412C WOMEN IN GERMAN CINEMA
In this course we will explore representations of women in post-World War II German cinema. Moving chronologically from the building of two German states to the post-unification period, we will consider the constantly shifting meaning of “woman” in popular and avant-garde films, narrative and documentary films, films by both male and female directors. We will consider equally films from East and West Germany. How does woman function as a narrative device in these films? Do women behind the camera change, woman’s meaning within the film? Can woman consistently be reduced to one narrative trope (mother, comrade or whore), or does she resist? All readings and discussions are in English; all films are subtitled.
CLT 412I CINEMA & REVOLUTION
This course will explore the relationship between film and revolution in West German cinema from 1965 to the present. We will consider cinema's potential as a revolutionary medium, while also focusing on how revolution is thematized and constructed in both fiction and documentary films. The course will engage with issues such as coming to terms with the fascist past, recreating the cinema as a revolutionary artistic form, feminism as a revolutionary perspective, the domestic sphere as a revolutionary space, and the co-optation of the cinema's revolutionary potential through mass consumption.

CLT 412M HOLLYWOOD BEHIND THE WALL: An Introduction to East German Cinema
This course will explore major developments in the East German cinema, including issues such as coming to terms with the fascist past, popular filmmaking and art cinema, cinema as a pedagogical tool, artistic dissent and state censorship, socialist ideologies of gender, and the politics of documentary. Each film will be explored in relation to its socio-historical context, providing students with an overview of East German film and culture.

CLT 414A TOURIST JAPAN

CLT 414C AKIRA KUROSAWA

CLT 414M ATOMIC CREATURES: GODZILLA
Origins and development of the Japanese kaiju eiga (monster film): nuclear imagery and the science fiction/horror/creature film genre.

CLT 414N TOURIST JAPAN

CLT 416A MEXICAN FILM

CLT 416B SPANISH FILM

CLT 417 Men of Marble, Women of Steel: An Introduction to East European Film
This course will provide a general introduction to the history, artistry and politics of East European film. We will begin by considering the place of East European film in the context of contemporary film studies and the industry structure of state socialist film making. We will then explore individual films from a regional (not national) perspective, considering how they confront issues such as the burden of history and ethics, the tensions between modernity and tradition, the struggle between creativity and censorship, as well as the reluctant feminism of state socialism and representations of gender and sexuality.

CLT 417B RACE & GENDER IN POP FILM

CLT 419 WEIMAR CULTURE

CLT 421 MUTILATED BODIES
‘Transnational sisterhood’ or cultural imperialism? Legitimate ritualized practice or outdated violent ritual? Genital cutting, female circumcision, female genital surgery? The controversy over this practice already begins with the act of its naming. If there seems to be a consensus about the physical violence imposed on the female body, why is it that western feminist discourse is suspected of perpetuating the mutilation African voices? This course seeks to provide an understanding of the context in which a fragmented 'transnational sisterhood' allows for a proliferation of mutilated discourses on mutilated postcolonial bodies. Readings and Films include Alice Walker (Warrior Marks), Florence Ayissi Fauziya Kassindja (Do They Hear You When You Cry), Maryse Conde and more critical and theoretical readings from African, French and North American authors. In English.

CLT 422B GENDER & SEX IN 20TH CENTURY
This course will examine literary, artistic, and theoretical representations of gender and sexuality as they have changed in the course of the 20th Century. The focus will be on texts from Western Europe and the US, but we will also consider other perspectives. From the New Women to French Feminists and transnational feminism. from homophile societies to “queer nation and gay marriage, from Sigmund Freud to Michel Foucault and Judith Butler, we will explore the contested and politically charged debates around gender and sexuality that have shaped our views of identity over the last century.
CLT 423 GERMAN THINKERS

CLT 424B MODERN JPN WOMEN WRITERS

CLT 427 BODY POLITICS IN JPN CULTURE

CLT 428 BRAZILIAN LIT AND CULTURE

CLT 429 COLONIAL LATIN AMERICAN LIT

CLT 430 FILM AS OBJECT

CLT 430A FRENCH SOCIAL THOUGHT
This course examines the singular contribution of French thinkers to the development of the social sciences (or the “sciences of man,” as they are known in France) in the twentieth century. We will examine the theory of gift exchange in Marcel Mauss, the rise of structural anthropology in Claude Lévi-Strauss, the sociology of Pierre Bourdieu, and the theories of religion and culture of René Girard and Marcel Gauchet. We will also study post-structuralist thinkers such as Jacques Derrida and Jean-Luc Nancy when their work touches on issues of society and religion. Taught in English.

CLT 431B MADNESS & POST COLONIAL LIT
This course will explore inscriptions of madness in post-colonial African and Caribbean texts. Beyond the obvious and visible signs of what is generally termed “madness” (from the pathological to the political or cultural), we will ask ourselves if the postcolonial arena cannot be interpreted as a pervasive manifestation of madness, that is to say, of something fundamentally "alien, foreign" to the Known, to the imperial destructuring order, and to the disarticulated colonial and post-independent communities. By bringing together texts from different and diverse cultural and intellectual areas such as France, Guadeloupe, and Africa, we seek to confront the various “scriptures.” Issues of witch-hunt, of disintegration of Juletane, the Antillean women in West Africa, from Foucault's normative panopticism to Fanon's discussion of the black experience, the postcolonial situation, articulated or silenced, will be the focus of this course. Taught in English.

CLT 432 JEWISH WRITERS AND REBELS

CLT 435 TEXTS BEYOND BORDERS

CLT 437 GENDER & SEX IN 20TH CENTURY

CLT 439 REPRESENTING AFR-AMERICANS

CLT 441 CARIBBEAN NOVEL & THEORY

CLT 447 THEORY & PRACTICE OF COMEDY

CLT 451 STRANGERS IN A STRANGE LAND

CLT 452 BRIGHT LIGHTS, BIG CITY
The city in film and literature is never just a physical space - discourses of modernity and urban life are mapped onto real and imagines urban spaces. In this course we will explore how the relationship between the spaces of the city and the stories told about and through them shape our understanding of urban life. Some of the texts we will examine are: Fritz Lang's M, Arthur Schnitzler’s Dream Story, and Lloyd Bacon’s 42nd Street.

CLT 452A KAFKA & HIS WORLD
This course explores the weird, dreamlike, eerie, and inexplicable world of Kafka’s writings. In Kafka’s stories dogs conduct investigations, apes report to academies, men turn into bugs, the Statue of Liberty holds up a sword, and arrests occur without explanation as all expectations and assurances about the “rules” of existence, thought, and social order come into question. In this
course we will read texts such as: The Trial, The Metamorphosis, Amerika, The Castle, Investigations of a Dog, A Report to an Academy, In the Penal Colony, and A Hunger Artist. This course is taught in English.

CLT 455C CHEKHOV & SHORT STORY

CLT 456 GERMANY YEAR ZERO

CLT 458 MIDDLE EASTERN CINEMA

CLT 460 TRUTH & POWER

CLT 461 PHILOSOPHY OF ART

CLT 462 VISUAL & CULTURAL STUDIES

CLT 464A THE CULTURE OF ZEN

CLT 465B RUSSIA GOES TO MOVIES

CLT 467 AUTHOR: ANX OF INFL

CLT 472 FASSBINDER

CLT 473 FRENCH CINEMA 1930-1960

CLT 475 FRENCH PHILOSOPHY SINCE 1960

CLT 477 MODERN JPN LIT IN TRANS

CLT 478 JAPANESE POPULAR CULTURE

CLT 479 IMMIGRATION IN LIT AND FILM

CLT 480 AESTHETICS

CLT 482A MARX & MARXISM

It is not overstated to say that the works of Karl Marx have provided the transformational impulse to many of the changes of the 20th century. Who was this person, Karl Marx? Why is it that in this post-Cold War world his writings continue both to inspire and threaten contemporary readers? How have those inspired by Marx further developed his ideas to constitute the discourse of Marxism? In this course we will begin with discussions of key works by Marx. We will then move on to examine some significant contributions to Marxism. Additionally majors and minors can sign up for GER 211 where significant texts will be read and discussed in German.

CLT 482B NIETZSCHE & NIETZSCHEANS

Friedrich Nietzsche continues to be one of the most influential modern philosophers, yet controversy surrounds almost every aspect of his life and work. This course will help students go beyond the controversy in order to consider Nietzsche's texts discerningly and how he approached the problems of truth, power, and morality. Close examination of his most important writings will be complemented by inquiry into Nietzsche's effects on twentieth-century philosophy. Other thinkers include Martin Heidegger, Michel Foucault, Sarah Kofman, Jacques Derrida and Giles Deleuze.

CLT 483 SARTRE & HEIDEGGER

This course studies two of the most influential works in twentieth-century philosophy: Martin Heidegger's Being and Time (1927) and Jean-Paul Sartre's Being and Nothingness (1943). Together these two books defined existential phenomenology and changed the course of philosophy, exerting a profound influence over later writers and thinkers. Since both philosophers sought
to fundamentally redefine human subjectivity—its place in society, history, and the philosophical tradition—we will examine concepts such as freedom, reality, temporality, subjectivity, death, emotion, and the relation between self and other. We will also compare Sartre’s insights with those of Heidegger, particularly in regard to the concept of humanism, juxtaposing Sartre’s famous manifesto “Existentialism is a Humanism” (1946) with Heidegger’s critique of Sartre and French existentialism in his “Letter on Humanism” (1947).

**CLT 484 TRANSLATION & WORLD LITERATURE**

The focus of World Literature in Translation is to examine what makes a translation "successful" as a translation. By reading a series of recently translated works (some contemporary, some retranslations of modern classics), and by talking with translators, we will have the opportunity to discuss both specific and general issues that come up while translating a given text. Young translators will be exposed to a lot of practical advice throughout this class, helping to refine their approach to their own translations, and will expand their understanding of various practices and possibilities for the art and craft of literary translation.

**CLT 486 NEW AUSTRIAN CINEMA**

**CLT 487 STUDIES IN TRANSLATION**

**CLT 488 WOMEN IN GERMAN CINEMA**

**CLT 489 MAJOR SEMINAR**

**CLT 491 READING COURSE IN COMP LIT**

**CLT 492 PHOTO IN SP & SP AMERICA**

**CLT 495 MASTER’S RESEARCH IN COMP LIT**

**CLT 496 NEW AUSTRIAN CINEMA**

**CLT 591 PHD READING COURSE**

**CLT 592 LANGUAGE LEARNING AND TEACHING I**

The purpose of this six-week course is to prepare foreign language teaching assistants an understanding of second language learning and the current teaching methods used in foreign language classrooms. The course highlights the communicative approach to teaching language in which reading, speaking, listening and writing are integrated into the language learning process. Through experiential learning experiences, that included peer and instructor feedback, teaching assistants will learn to develop meaningful and culturally relevant lessons.

**CLT 593 LANGUAGE LEARNING & TEACHING II**

This course is a continuation of Languages, Learning, and Teaching I. Teaching assistants will develop and implement authentic materials/lessons that reflect the lives of their students. Students will also develop an understanding of long term planning and assessment. TAs will continue to receive and provide corrective feedback on lesson plans and lesson demonstrations as a means to build confidence and effective teaching methods.

**CLT 595 PHD RESEARCH**

**CLT 595A PHD RESEARCH IN ABSENTIA**

**CLT 895 CONT OF MASTER’S ENROLLMENT**

**CLT 899 MASTERS DISSERTATION**

**CLT 985 LEAVE OF ABSENCE**
CLT 986V  FULL TIME VISITING STUDENT
CLT 995  CONT OF DOCTORAL ENROLLMENT
CLT 997  DOCTORAL DISSERTATION
CLT 997A  DOCT DISSERTATN IN ABSENTIA
CLT 999  DOCTORAL DISSERTATION
CLT 999A  DOCT DISSERTATN IN ABSENTIA

CSC 108  TECHNICAL COMPUTING
An introduction to computer applications in business and graphic design. Students will begin by learning the basics and some advanced functions of Microsoft Word, Excel, and Powerpoint. The class then progresses through the Adobe graphic design applications Photoshop, After Effects, and Flash. In learning these applications, students are introduced to topics such as computer graphics, file compression, and animation. Not open to officially declared CSC majors.

CSC 112D  INTRO TO HUMAN/COMP INTERACT
This course was last offered in Spring 2013. There are no plans to offer it in the future.

CSC 131  RECREATIONAL GRAPHICS
A hands on introduction to 3D computer graphics and animation techniques taught from a user point of view. Topics include 3D modeling, animation, and simulation. Assessment based on projects. No written exams.

CSC 132  RECREATIONAL GRAPHICS II
A hands on project based instruction of 3D computer graphics and animation techniques taught from a user point of view using the BLENDER modeling system. Topics include fluid animation, storyboarding, sound, character rigging, and computer game design. Assessment based on projects. No written exams.

CSC 160  ENGINEERING COMPUTING
Introduction to programming and computational approaches to engineering problems and their solution. Matlab language illustrates principles such as data representation, mathematical operations, looping and decisions, functions and subroutines, display and user interaction. Projects from several different engineering domains have subjects like linear algebra, differential equations, fitting data to models, signal processing, and the practical use of analog-digital converters in an experimental setting.

CSC 161  THE ART OF PROGRAMMING
Organized thinking, creative problem solving, and the precise description of solutions are valuable skills in academia and life. The formulation and solution of problems using computers is increasingly important in all artistic and scholarly fields. We introduce core concepts and techniques of programming as a way to develop these skills, as basis for further CS study, and for application to other fields. Lab required.

CSC 162  THE ART OF DATA STRUCTURES
Computers are universal tools to store and process information. The storage part is organized as data structures; the processing part is captured as algorithms. Together, these form the heart of every computer application (in science, government, business, and the arts), on every kind of information (pictures, numbers, sound, and text). We will study the most fundamental data structures and algorithms as a means of using computers more effectively, and as preparation for more advanced study in CS and related fields. Lab required.

CSC 166  VIDEO GAME PROGRAMMING
Do you like to play video games? Why not learn how to make one? This course is a hands-on lab based introduction to software engineering and computer programming using the development of computer/video games as the application area. The course is taught using the C# language with the XNA game development framework targeting applications for the XBOX360 game
platform. Students will learn the basics of computer programming and the basics of the management and development processes of software engineering. This course is intended for students with little or no previous programming experience.

**CSC 169 WEB DESIGN**
Students will learn principles of web page design using HTML5 and CSS. Students will create web pages without programming. No prereq.

**CSC 170 Web Design and Development**
An introduction to Internet and Web technologies. Topics include Internet transport protocols, HTML5 and CSS3, Web page design and Website publishing. Emphasis is placed on fundamentals, design concepts and industry standards. Additional topics include the user experience, mobile design issues, and copyright/intellectual property considerations.

**CSC 170D INTRO TO WEB PROGRAMMING**
Students learn the technological components of programming for the worldwide web. They will also study the historical, aesthetic and social components of computer code.

**CSC 171 THE SCIENCE OF PROGRAMMING**
Discovering, formulating, and exploiting the structure of problems to aid in their solution by computer. An introduction to algorithmic problem solving and computer programming in Java.

**CSC 172 THE SCIENCE OF DATA STRUCTURES**
Abstract data types (e.g., sets, mappings, and graphs) and their implementation as concrete data structures in Java. Analysis of the running times of programs operating on such data structures, and basic techniques for program design, analysis, and proof of correctness (e.g., induction and recursion). Lab required.

**CSC 172H SCI OF DATA STRUCT. HONORS**
Abstract data types (e.g., sets, mappings, and graphs) and their implementation as concrete data structures in Java. Analysis of the running times of programs operating on such data structures, and basic techniques for program design, analysis, and proof of correctness (e.g., induction and recursion). Students in the Honors version of 172 will have additional projects and assignments.

**CSC 173 COMPUTATION & FORMAL SYSTEMS**
Investigation of several formal systems influential in computer science, and also some of their applications (e.g. inspiring and providing the foundation for a computer programming style, or providing the basis for solving important practical problems like communications protocols, compiling, systems analysis, graphics ...)

**CSC 191 MACHINES & CONSCIOUSNESS**
This course explores the possibility of consciousness in machines, both in the sense of perceptual awareness and self-awareness. Readings are from the AI literature as well as from philosophy and cognitive science. The course will begin with some general philosophical and cognitive science readings, and then shift emphasis to representational and computational aspects. Homework will include written answers to questions, essays, and -- for 291 students only -- a project that involves Lisp programming. The course will be suitable for writing credit. (4 hours, Spring) Not offered every year.

**CSC 194 NETWORK PHENOMENA**
We will examine and relate "connectedness" phenomena in a broad spectrum of social, economic, and technological settings. Students taking course at graduate level will have additional readings and assignments. Prerequisites: senior standing or permission of instructor.

**CSC 199 CREATIVE COMPUTING**
Rotating topics in computer science that do not require prior computing experience. This course may be repeated for credit for different topics. See term for details.

**CSC 200 UNDERGRAD PROBLEM SEMINAR**
Intensive seminar on cooperative problem solving. Overview of the subdisciplines and the research of the University of Rochester’s computer science faculty. 200H required for the Honors B.S. in Computer Science; 200 required for the B.S. Students taking CSC 200H may have additional reading, assignments or projects.

**CSC 200H UNDERGRAD PROBLEM SEMINAR Honors**
Intensive seminar on cooperative problem solving. Overview of the subdisciplines and the research of the University of Rochester’s computer science faculty. 200H required for the Honors B.S. in Computer Science; 200 required for the B.S. Students taking CSC 200H may have additional reading, assignments or projects.

**CSC 209 ADV FRONT END WEB DEVELOPMENT**
"Front-end" is an industry term that refers to the focus on HTML, CSS and JavaScript, which differentiates this course from the formal programming courses. Topics in CSC 209 will include Information Architecture, visual design, use of client libraries (mostly JS), and asset management strategies; we will also cover Content Management Systems and introduce web databases using PHP and MySQL.

**CSC 210 Principles of Web Application Development**
The World Wide Web was born around 1990, so it is not much older than most of you. In this course, we will follow the growth of the Web from its toddler years, to early childhood, to its turbulent pre-teen and teenage years, and finally as it begins to mature as a young adult. Along this journey, you will learn influential Web technologies such as HTTP, HTML, JavaScript, CSS, the LAMP stack, XML, JSON, Ajax, WebSockets, and modern MVC frameworks. Even though you will be doing a lot of programming in this course, its purpose is not to teach you to become an expert in any particular language or framework. Web technologies change at a blistering pace, so specifics quickly get outdated. However, once you take this course and understand the fundamentals, you will be able to easily pick up new technologies on the fly.

**CSC 211 PRINCIPLES OF Human Computer Interaction**
In this course, you will learn how to design technology that bring people joy, rather than frustration. We will cover the fundamentals of HCI, including principles of design, cognition, and user experience. You will learn about rapid prototyping techniques and how to evaluate systems, and why they are essential to the design of interactive systems.

**CSC 212 HUMAN COMPUTER INTERACTION**
This course will explore the design, implementation, and evaluation of user interfaces. Students will study the theoretical methods for interface design and evaluation, including requirements gathering, usability heuristics, user interface inspections, usability studies, information visualization, and prototyping. Case studies of interface successes and failures will augment theory with practical experiences. Students will apply this methodology to assignments in the design, implementation, and evaluation cycle. Students taking this course at the graduate level will have additional readings and assignments.

**CSC 231 ROBOT CONTROL**
This course covers control and planning algorithms with applications in robotics. Topics include transfer function models, state-space models, root-locus analysis, frequency-response analysis, Bode diagrams, controllability, observability, PID control, linear quadratic optimal control, model-predictive control, stochastic control, forward and inverse kinematics, dynamics, joint space control, operational space control, and robot trajectory planning. Proficiency with Matlab/C++ is recommended.

**CSC 240 DATA MINING**
Fundamental concepts and techniques of data mining, including data attributes, data visualization, data pre-processing, mining frequent patterns, association and correlation, classification methods, and cluster analysis. Advanced topics include outlier detection, stream mining, and social media data mining.

**CSC 242 ARTIFICIAL INTELLIGENCE**
Introduces fundamental principles of artificial intelligence, including heuristic search, automated reasoning, handling uncertainty, and machine learning. Presents applications of AI techniques to real-world problems such as understanding the web, computer games, biomedical research, and assistive systems. This course is a prerequisite for advanced AI courses.

**CSC 242W ARTIFICIAL INTELLIGENCE**
This is the upper level writing component attached to CSC 242.
CSC 244 LOGICAL FOUNDATIONS OF A.I.
An introduction to the logical foundations of AI, including first-order logic, search, knowledge representation, planning. Students taking this course at the 400 level will be required to complete additional readings and/or assignments, including a significant project or essay.

CSC 246 Machine Learning
This course presents the mathematical foundations of AI, including probability, decision theory and machine learning.

CSC 247 NATURAL LANGUAGE PROCESSING
An introduction to natural language processing; constructing computer programs that understand natural language. Topics include parsing, semantic analysis, and knowledge representation. CSC 447, a graduate-level course, requires additional readings and assignments.

CSC 248 STATISTICAL SPEECH & LANGUAGE PROCESSING
An introduction to statistical natural language processing and automatic speech recognition techniques. This course presents the theory and practice behind the recently developed language processing technologies that enable applications such as speech-driven dictation systems, document search engines (e.g., finding web pages) and automatic machine translation. Students taking this course at the 400 level will be required to complete additional readings and/or assignments.

CSC 249 MACHINE VISION
Introduction to computer vision, including camera models, basic image processing, pattern and object recognition, and elements of human vision. Specific topics include geometric issues, statistical models, Hough transforms, color theory, texture, and optic flow. CSC 449, a graduate-level course, requires additional readings and assignments.

CSC 250 DATA SCI FOR LINGUISTICS
See LINGUISTICS course listing. This is a cross-listed course.

CSC 251 ADVANCED COMPUTER ARCHITECTURE
This course is cross-listed with ECE 201. Check the description there.

CSC 252 COMPUTER ORGANIZATION
Introduction to computer architecture and the layering of hardware/software systems. Topics include instruction set design; logical building blocks; computer arithmetic; processor organization; the memory hierarchy (registers, caches, main memory, and secondary storage); I/O—buses, devices, and interrupts; microcode and assembly language; virtual machines; the roles of the assembler, linker, compiler, and operating system; technological trends and the future of computing hardware. Several programming assignments required.

CSC 253 DYNAMIC LANGUAGE & SOFTWARE DEVELOPMENT
This course explores unique aspects of dynamically-typed programming languages, which are now pervasive in domains such as scientific research, Web application development, gaming, and user interface design. The lessons you will learn here complement those in traditional compilers and programming languages courses, which focus mainly on statically-typed languages. We will use the Python language as a case study. In the first half of this course, we will study the internals of the Python interpreter, which is implemented in C. In the second half, we will build analysis and debugging tools for Python, potentially extending open-source tools with large user bases.

CSC 254 PROGRAMMING LANGUAGE DESIGN & IMPLEMENTATION
Design and implementation of programming languages, with an emphasis on imperative languages and on implementation tradeoffs. In-depth examination of "how programming languages work." Topics include fundamental language concepts (names, values, types, abstraction, control flow); compilation and interpretation (syntactic and semantic analysis, code generation and optimization); major language paradigms (imperative, object-oriented, functional, logic-based, concurrent). Course projects include assignments in several different languages, with an emphasis on compilation issues.

CSC 255 Software Analysis and Improvement
Programming is the automation of information processing. Program analysis and transformation is the automation of programming itself—how much a program can understand and improve other programs. Because of the diversity and complexity of computer hardware, programmers increasingly depend on automation in compilers and other tools to deliver efficient and reliable software. This course combines fundamental principles and (hands-on) practical applications. Specific topics include data flow and dependence theories; static and dynamic program transformation including parallelization; memory and cache management; type checking and program verification; and performance analysis and modeling. The knowledge and practice will help students to become experts in software performance and correctness. Students taking the graduate level will have additional course requirements and a more difficult project.

CSC 256 OPERATING SYSTEMS
Principles of operating system design, explored within the practical context of traditional, embedded, distributed, and real-time operating systems. Topics include device management, process management, scheduling, synchronization principles, memory management and virtual memory, file management and remote files, protection and security, fault tolerance, networks, and distributed computing. CSC 456, a graduate-level course, requires additional readings and assignments.

CSC 257 COMPUTER NETWORKS

CSC 258 PARALLEL & DISTRIBUTED SYSTEMS
Principles of parallel and distributed systems, and the associated implementation and performance issues. Topics covered will include programming interfaces to parallel and distributed computing, interprocess communication, synchronization, and consistency models, fault tolerance and reliability, distributed process management, distributed file systems, multiprocessor architectures, parallel program optimization, and parallelizing compilers. Students taking this course at the 400 level will be required to complete additional readings and/or assignments.

CSC 260 DIALOG SYSTEMS
This course will examine recent research in computational linguistics and artificial intelligence on natural language dialog systems. Students will take turns leading the discussion of current research papers. Undergraduates taking the course for credit will also be required to prepare a written review of one of the papers. Graduates taking the course may have additional readings or assignments. It may be repeated for credit with permission of the instructor.

CSC 261 DATABASE SYSTEMS
This course presents the fundamental concepts of database design and use. It provides a study of data models, data description languages, and query facilities including relational algebra and SQL, data normalization, transactions and their properties, physical data organization and indexing, security issues and object databases. It also looks at the new trends in databases. The knowledge of the above topics will be applied in the design and implementation of a database application using a target database management system as part of a semester-long group project.

CSC 262 COMP INTRO TO STATISTICS
This course is cross-listed with DSC 262. Please refer to the description of that course.

CSC 263 COMPUTATIONAL MODELS OF MUSIC
We will explore various computational approaches to musical problems (rule-based approaches, connectionism, dynamical systems, and probabilistic models), focusing on two main areas: 1) models of musical processing and information retrieval; 2) models of musical styles. Our focus will be on the symbolic level of music representation rather than on the signal level (there will be no signal processing in the course). Most assignments will consist of reading articles and answering questions about them. There will be some programming assignments, with other options for students without programming ability.

CSC 264 COMPUTER AUDITION
This course is cross-listed with ECE477. Please refer to ECE 477 for the course description.
CSC 265 INTERMED STATISTICAL METHODS
This course is cross-listed with DSC265. Please see DSC265 for the course description.

CSC 266 GPU PAR PROG USING C/C++
This course is cross-listed with ECE206. Please refer to that course description.

CSC 267 ADVANCED GPU
This course is cross-listed with ECE. In this course, advanced GPU parallel programming techniques are taught that permit extremely compute-intensive applications to be run in real-time on a cloud-based GPU cluster. These applications demand 100x to 1000x more compute power than a single CPU (or even a GPU) can provide, making it necessary to utilize the cloud for computation. An additional layer of complexity is introduced into the computational model when real-time response is required. Students will be exposed not only to the most challenging GPU parallel programming methods, but also the intricacies of running such compute-intensive applications through high-latency (and potentially unpredictable) communications links.

CSC 280 COMPUTER MODELS & LIMITATIONS
This course studies fundamental computer models and their computational limitations. Finite-state machines and pumping lemmas, the Chomsky hierarchy, Turing machines and algorithmic universality, noncomputability and undecidability, tradeoffs between power and formal tractability.

CSC 281 INTRO TO CRYPTOGRAPHY
The modern study of cryptography investigates techniques for facilitating interactions between distrustful entities. In this course we introduce some of the fundamental concepts of this study. Emphasis will be placed on the foundations of cryptography and in particular on precise definitions and proof techniques.

CSC 282 DESIGN & ANALYSIS OF EFFICIENT ALGORITHMS
How does one design programs and ascertain their efficiency? Divide-and-conquer techniques, string processing, graph algorithms, mathematical algorithms. Advanced data structures such as balanced tree schemes. Introduction to NP-completeness and intractable combinatorial search, optimization, and decision problems.

CSC 283 TOPICS IN CRYPTOGRAPHY
This will be a seminar-style course in which students will read and present papers on current research in Cryptography. Potential topics include lattice-based cryptography, concurrency and protocol security, database privacy, cryptographic game theory and interplay of cryptography with other fields.

CSC 284 ADVANCED ALGORITHMS
Advanced study of design and analysis of algorithms. Topics typically include: growth of functions; recurrences; probabilistic analysis and randomized algorithms; maximum flow; sorting networks; expander graphs; matrix operations; linear programming; discrete Fourier transform; number-theoretic algorithms; string matching; computational geometry; NP-completeness; approximation algorithms. Students taking this course at the 400 level may be required to complete additional tests, readings or assignments.

CSC 285 ALGORITHMS & ELECTIONS
The focus of this course is on using algorithms to manipulate elections and on using complexity to protect elections from such manipulative attacks. Among the attacks we will study are manipulation, bribery and control. Students taking this course at the 400 level may be required to complete additional tests, readings, or assignments.

CSC 286 COMPUTATIONAL COMPLEXITY
The difference between computable and uncomputable problems and between feasible and infeasible problems. Regarding the latter, what properties of a problem make it computationally simple? What properties of a problem may preclude its having efficient algorithms? How computationally hard are problems? Complete sets and low information content; P=NP; unambiguous computation and one-way functions; reductions relating the complexity of problems; complexity classes and hierarchies.

CSC 291 Topics in Cognitive Science
This course covers special topics that are of current interest in the area of Cognitive Science. Topics vary by term. Check term detail for information regarding the particular semester.

**Offered:** Spring

**CSC 292** Topics in Programming Languages
This course covers special topics that are of current interest in the area of Programming Languages. Topics vary by term. Check term detail for information regarding the particular semester.

**CSC 293** TOPICS IN Programming Systems
This course covers special topics that are of current interest in the area of Programming Systems. Topics vary by term. Check term detail for information regarding the particular semester.

**CSC 294** Topics in Theory of Computation
This course covers special topics that are of current interest in the area of Theory of Computation. Topics vary by term. Check term detail for information regarding a particular semester.

**CSC 295** Topics in Human Computer Interaction
This course covers special topics that are of current interest in the area of Human Computer Interaction. Topics vary by term. Check term detail for information regarding a particular semester.

**CSC 296** Topics in Applications of Computer Science
This course covers special topics that are of current interest in the area of Applications of Computer Science. Topics vary by term. Check term detail for information regarding a particular semester.

**CSC 297** Topics in Artificial Intelligence
This course covers special topics that are of current interest in the area of Artificial Intelligence. Topics vary by term. Check term detail for information regarding the particular semester.

**CSC 298** Topics in Digital Media
This course covers special topics that are of current interest in the area of Digital Media. Topics vary by term. Check term detail for information regarding a particular semester.

**CSC 299** Topics in Computer Science (other)
This course covers special topics that are of current interest in the area of Computer Science (other). Topics vary by term. Check term detail for information regarding a particular semester.

**CSC 390** SUPERVISED TEACHING

**CSC 391** INDEPENDENT STUDY

**CSC 391H** INDEPENDENT STUDY-HONORS

**CSC 391W** INDEPENDENT STUDY

**CSC 392** PRACTICUM

**CSC 393** SENIOR PROJECT

**CSC 393H** SENIOR PROJECT-HONORS

**CSC 393W** SENIOR PROJECT

**CSC 394** INTERNSHIP
CSC 395 RESEARCH

CSC 395H HONORS SENIOR THESIS

CSC 395W HONORS SEMINAR

CSC 396 SPECIAL PROJECTS

CSC 396A HAPTIC INTERACTIVE TECH
Group Independent Study

CSC 396B BRAILLE TECHNOLOGIES
Group research topic. Varies by term

CSC 396C MATLAB COMP CHEMISTRY
Group research topic. Varies by term

CSC 396D ROBOT SOCCER
Group research topic. Varies by term

CSC 400 PROBLEM SEMINAR
An introduction to the technical, social, economic, and political aspects of graduate education in computer science at Rochester. Class meetings consist primarily of group discussions and presentations that focus on a broad range of topics, and are intended to improve the critical analysis, technical writing, presentation, and problem-solving skills of students. Both class discussions and written assignments are drawn from material presented in other first-year graduate courses offered within the department. The course also offers a forum for individual department faculty members to discuss their research interests and recent results. Satisfactory performance is required of all first-year graduate students.

CSC 410 WEB PROGRAMMING
This course is cross-listed with CSC 210. Please refer to that description.

CSC 412 HUMAN COMPUTER INTERACTION
See CSC 212 for description. Cross-listed course.

CSC 440 DATA MINING
See CSC 240 for description. Cross-listed course.

CSC 443 INTRO TO COMPUTATIONAL NEURO
This course is cross-listed with BCS 547. Please refer to that course description.

CSC 444 LOGICAL FOUNDATIONS OF A.I.
See CSC 244 for course description. Cross-listed course.

CSC 446 MACHINE LEARNING
See CSC 246 for description. Cross-listed course.

CSC 447 NATURAL LANGUAGE PROCESSING
See CSC 247 for description. Cross-listed course.

CSC 448 STATISTICAL SPEECH & LANGUAGE PROCESSING
See CSC248 for description. Cross-listed course.
CSC 449 MACHINE VISION
See CSC 249 for description. Cross-listed course.

CSC 450 DATA SCI FOR LINGUISTICS
See LIN250 for course description.

CSC 451 ADVANCED COMPUTER ARCHITECTURE
This course is cross-listed with ECE201. Please refer to that course description.

CSC 452 MULTIPROCESSOR ARCH
Please refer to ECE204

CSC 453 DYNAMIC LANG. & SOFT. DEV.
See CSC 253 for description. Cross-listed course.

CSC 454 PROGRAMMING LANGUAGE DESIGN & IMPLEMENTATION
See CSC 254 for description. Cross-listed course.

CSC 455 SOFTWARE PERFORMANCE AND CORRECTNESS
Please refer to CSC255 description.
Offered: Spring

CSC 456 OPERATING SYSTEMS
Please refer to CSC256 course description.

CSC 457 COMPUTER NETWORKS
Please refer to CSC257 course description.

CSC 458 PARALLEL & DIST. SYSTEMS
Please refer to CSC258 course description.

CSC 460 DIALOG SYSTEMS
Please refer to CSC260 for course description.

CSC 461 DATABASE SYSTEMS
Please refer to CSC261 course description.

CSC 462 COMP INTRO TO STATISTICS
Please refer to DSC262 course description.

CSC 463 COMP MODELS OF MUSIC
Please refer to CSC263 course description.

CSC 464 COMPUTER AUDITION
Please refer to ECE 477 for course description.

CSC 465 INTERMED STATISTICAL METHODS
Please refer to DSC265 for course description.

CSC 466 GPU PAR PROGRAM USING C/C++
Please refer to ECE 206 for course description.

**CSC 467** ADVANCED GPU
Please refer to ECE 277 for course description.

**CSC 481** INTRO TO CRYPTOGRAPHY
Please refer to CSC281 for course description.

**CSC 483** TOPICS IN CRYPTOGRAPHY
Please refer to CSC283 for course description.

**CSC 484** ADVANCED ALGORITHMS
Please refer to CSC284 for course description.

**CSC 485** ALGORITHMS & ELECTIONS
Please refer to CSC285 for course description.

**CSC 486** COMPUTATIONAL COMPLEXITY
Please refer to CSC 286 for course description.

**CSC 490** SUPERVISED TEACHING

**CSC 491** INDEPENDENT STUDY

**CSC 494** MASTERS INTERNSHIP

**CSC 495** MS Research in CSC

**CSC 512** COMP METHODS COG SCI
Please refer to BCS512 for course description.

**CSC 513** COGNITV PROCESSING ON BLKB RD
Please refer to BCS 532 for course description.

**CSC 530** DATA-ENABLED RESEARCH

**CSC 531** PRACTICUM DATA-ENABLED

**CSC 572** TOPICS IN SYSTEMS SECURITY

**CSC 573** MEMORY SYSTEMS

**CSC 574** COMP INTRO TO STATISTICS

**CSC 575** HEALTH AND WELLNESS

**CSC 576** BIG DATA ANALYTICS

**CSC 577** OPTIMIZATION

**CSC 579** CACHE MEMORY
CSC 591 INDEPENDENT STUDY

CSC 594 INTERNSHIP

CSC 595 PHD RESEARCH IN CSC

CSC 595A PHD RESEARCH IN ABSENTIA

CSC 597 COMPUTER SCIENCE COLLOQUIUM

CSC 895 CONT OF MASTER'S ENROLLMENT

CSC 897 MASTERS DISSERTATION

CSC 897A MASTERS DISSERTATION IN ABSENTIA

CSC 899 MASTER'S DISSERTATION

CSC 985 LEAVE OF ABSENCE

CSC 986V FULL TIME VISITING STUDENT

CSC 990 SUMMER IN RESIDENCE

CSC 995 CONT OF DOCTORAL ENROLLMENT

CSC 997 DOCTORAL DISSERTATION

CSC 997A DOCTORAL DISSERTATION IN ABSENTIA

CSC 999 DOCTORAL DISSERTATION

CSC 999A DOCTORAL DISSERTATION IN ABSENTIA

CSP 161 SOCIAL PSYCHOLOGY AND INDIVIDUAL DIFFERENCES
Introduction to field of social psychology and overview of research on individual differences in personality. Topics include: the self, attributions, social cognition, interpersonal attraction, relationships, helping, social influence, traits, and motive dispositions. Students complete and receive personal feedback on a number of personality measures.
Offered: Spring Summer

CSP 161W SOCIAL PSYCHOLOGY AND INDIVIDUAL DIFFERENCES
Fulfills upper-level writing requirement.

CSP 171 SOCIAL AND EMOTIONAL DEVELOPMENT
An examination of the interpersonal, emotional, cognitive, and environmental factors that influence children's social and emotional development from early infancy through late adolescence.
Offered: Fall Summer

CSP 171W SOCIAL AND EMOTIONAL DEVELOPMENT
Fulfills Upper-Level Writing Requirement
Offered: Fall

CSP 181 THEORIES OF PERSONALITY AND PSYCHOTHERAPY
A survey of personality, emphasizing modern theoretical approaches, basic methods of investigation, and the relations of these theories to psychotherapy and behavioral change.
Offered: Fall Summer

**CSP 181W THEORIES OF PERSONALITY AND PSYCHOTHERAPY**
Fulfills Upper-Level Requirement

**CSP 209 PSYCHOLOGY OF HUMAN SEXUALITY**
Survey course on understanding sexuality. Includes such topics as biological sexual differentiation, gender role, gender-linked social behaviors, reproduction issues, intimacy, and the role of social and personal factors in psychosexual development.
Offered: Spring Summer

**CSP 209W HUMAN SEXUALITY**

**CSP 210 SOCIAL COGNITION**
Social cognition combines classic social psychology with methods and theories from cognitive psychology and neuroscience to study how people make sense of each other and the social world. We will examine how the social environment influences cognitive processes such as attention, heuristics, and appraisals, and how these processes in turn affect decisions, behaviors, and health. We will critically evaluate research on a variety of topics, such as emotion regulation, stereotyping and prejudice, and stress and decision making.

**CSP 210W SOCIAL COGNITION**
Fulfills Upper-Level Requirement

**CSP 211 INTRODUCTION TO STATISTICAL METHODS IN PSYCHOLOGY**
Introduction to the use of statistics in psychological research. Topics include descriptive statistics, correlation and regression, and inferential statistics. Examples are drawn from social and personality psychology. Logic of statistical inference and proper interpretation of research findings are emphasized. (Fall & Spring) Please note that, because of the significant overlap between them, students may earn degree credit for only one of these courses: CSP/PSY 211, STT 211 and STT 212.
Offered: Fall Spring Summer

**CSP 219W RESEARCH METHODS IN PSYCHOLOGY**
An introduction to the basic concepts, logic, and procedures needed to do psychological research. Hands-on experience with all major phases of the research process is provided, including: surveying the existing literature, developing research hypotheses, collecting and analyzing data, and reporting the results in manuscript form
Offered: Fall Spring

**CSP 232 PSYCHOLOGY OF CONSUMERISM**

**CSP 232W PSYCHOLOGY OF CONSUMERISM**

**CSP 262 AN APPROACH TO HUMAN MOTIVATION**
This course provides a review of the theoretical and empirical development of a contemporary approach to human motivation, namely, Self-Determination Theory, which originated at the University of Rochester and is currently researched by scholars around the world. Topics will also include applications of Self-Determination Theory to such domains as psychopathology and psychological health, work, education, sport, and culture
Offered: Spring Summer

**CSP 262W AN APPROACH TO HUMAN MOTIVATION**
Fulfills upper-level writing requirement.
Offered: Spring
CSP 263 RELATIONSHIP PROCESS & EMOTIONS
Relationships are among the most important endeavors of human activity. In the past three decades, extensive theory and research has been devoted to understanding the processes that regulate thoughts, feelings, and behavior in meaningful relationships with friends, family, and romantic partners. We will review scientific research on important topics such as attraction, attachment, emotion, intimacy, conflict resolution, relationship development and deterioration, and the impact of relationships on physical health and emotional well-being.
Offered: Fall Summer

CSP 263W RELATIONSHIP PROCESS AND EMOTIONS
Fulfills Upper-Level Requirement
Offered: Fall

CSP 264 INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY
Applications of psychological theory and research to work settings. Topics include personnel selection, training and appraisal; organizational structure and transformation; performance in work groups; motivation and satisfaction; leadership; work conditions; and cross-cultural issues.
Offered: Fall

CSP 264W INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY
Fulfills Upper-Level Writing Requirement
Offered: Fall

CSP 267 PSYCHOLOGY OF GENDER
Exploration of the ways males and females differ in interaction, theories of development of sex differences, consequences for social change.
Offered: Fall Summer

CSP 267W PSYCHOLOGY OF GENDER
Fulfills Upper-Level Writing Requirement

CSP 274W COMM YOUR PROF PSYCH ID

CSP 276 PSYCHOLOGY OF PARENTING
Parenting and family life are emphasized from developmental, ecological, and cross-cultural perspectives. Caregiving in diverse family forms and cultures is studied in relation to adult-child interactions, parent/school/community relations, family roles, laws, and parenting skills. Issues related to aspects of diversity in contemporary families are included.

CSP 278 ADOLESCENT DEVELOPMENT
This course surveys theory and research relating to normal development during adolescence. Adolescent development is examined in a variety of contexts, including families, peer groups, and schools, and issues pertaining to biological, social, and cognitive development are discussed.
Offered: Spring Summer

CSP 278W ADOLESCENT DEVELOPMENT
Fulfills upper-level writing requirement.
Offered: Spring

CSP 280 CLINICAL PSYCHOLOGY
An introduction to the field of clinical psychology. Students are exposed to prevalent theoretical and research models, as well as approaches and research findings to assessment and diagnosis, and treatment modalities.
Offered: Fall
CSP 280W CLINICAL PSYCHOLOGY
Fulfills upper-level writing requirement.
Offered: Fall

CSP 281 PSYCHOLOGY AND THE LAW
This course provides an introduction and overview to the intersection between psychology and the legal system. Topics will include: forensic assessment, expert testimony, children and adolescents and the legal system, and the application of psychological science to legal issues.
Offered: Fall Summer

CSP 281W PSYCHOLOGY AND THE LAW
Fulfills Upper-Level Writing Requirement

CSP 282 ABNORMAL PSYCHOLOGY
This course provides a conceptual overview to the field of psychopathology. We will discuss assessment and diagnosis, etiology, developmental course, treatment, and prognosis of the major psychological disorders. Current theory and research will be emphasized.
Offered: Spring Summer

CSP 282W ABNORMAL PSYCHOLOGY
Fulfills upper-level writing requirement.
Offered: Spring

CSP 283 BEHAVIORAL MEDICINE
An overview of the application of behavior/lifestyle change approaches to the treatment of medical disorders, and the examination of interfaces between behavior and physiology. Topics include diabetes, cardiovascular risk factors, chronic pain, and cancer.

CSP 283W BEHAVIORAL MEDICINE
Fulfills upper-level writing requirement.
Offered: Spring

CSP 289 DEVELOPMENTAL CHILD PSYCHOPATHOLOGY
Presents theory, research, assessment, and intervention in child and adolescent psychological disorder. Contributions of the normal developmental perspective to understanding psychopathology and risk, and vice versa, are emphasized.
Offered: Fall Summer

CSP 289W DEVELOPMENTAL CHILD PSYCHOPATHOLOGY
Fulfills Upper-Level Writing Requirement.

CSP 301W TEACHING PSYCHOLOGY
In-depth consideration of topics in psychology and their communication. PSY 101 is a lab for this course.

CSP 302 TEACHING PSY OF PERSONALITY

CSP 303 TEACHING PSYCH OF MOTIVATION

CSP 310W HONORS RESEARCH
Development and conduct of research leading to the Honors Thesis.

CSP 311 HONORS RESEARCH
Development and conduct of research leading to the Honors Thesis.
Offered: Spring

**CSP 323W** POS YOUTH DVLPMNT:CHILD/ADOL

**CSP 340** DEPRESSION & ANXIETY SEMINAR

**CSP 351** RESEARCH IN DEVELOPMENT NEUROPSYCHOLOGY
This course provides guided, direct research experiences in developmental neuropsychology, with a particular focus on autism and other developmental disabilities.

**CSP 352** RESEARCH IN DEVELOPMENTAL NEUROPSYCHOLOGY
This course provides guided, direct research experiences in developmental neuropsychology, with a particular focus on autism and other developmental disabilities.
Offered: Spring

**CSP 356** RESEARCH IN ADOLESCENT DEVELOPMENT
This course provides guided, direct experiences with research on adolescent development, with a particular focus on adolescence in the contest of family relationships.
Offered: Spring

**CSP 364** ACHIEVEMENT & MOTIVATION
Seminar on achievement motivation, including achievement motives, achievement goals, and the strategies individuals use in achievement settings.
Offered: Spring

**CSP 365** COMPETENCE&MOT:DEV COUNTRIES

**CSP 368W** SEMINAR IN HUMANISTIC PSYCHOLOGY
An introduction to the theory and methods of humanistic psychology with particular emphasis on humanistic approaches to psychotherapy and growth. The approach is learning through experience. The class employs the methods of humanistic psychology, including demonstrations and experimentation. Assignments include regular reading and writing. Writings require the applications of theory to one’s own life experiences. This is an upper-level writing course for all participants.
Offered: Fall

**CSP 369** RESEARCH IN HUMAN MOTIVATION

**CSP 373** EXPLORING RESEARCH IN SOCIAL PSYCHOLOGY I
First-hand team experience with ongoing research in social psychology areas.
Offered: Fall

**CSP 373W** EXPLORING RESEARCH IN SOCIAL PSYCHOLOGY I
Fulfills Upper-Level Writing Requirement
Offered: Fall

**CSP 374** EXPLORING RESEARCH IN SOCIAL PSYCHOLOGY II
First-hand team experience with ongoing research in social psychology areas.
Offered: Spring

**CSP 375W** ADV TOP:RELATIONSHIPS & EMO
**CSP 376 SEM IN MOTIVATION THEORIES**
Deals with contemporary theories of human motivation in social, personality, and developmental psychology. PSY 262 is a prerequisite for this course. Note: Instructor permission required.

**CSP 377 EXPLORING RESEARCH IN FAMILY PSYCHOLOGY**
Provides guided, direct, research experiences in investigating the interplay between family relationships and children’s social and emotional development. Emphasis is placed on gaining knowledge in translating theories (e.g., family systems theory) into empirically testable hypotheses and designing research methods and techniques to test predictions.
Offered: Fall

**CSP 378 EXPLORING RESEARCH IN FAMILY PSYCHOLOGY II**
Provides guided, direct, research experiences in investigating the interplay between family relationships and children's social and emotional development. Emphasis is placed on gaining knowledge in translating theories (e.g., family systems theory) into empirically testable hypotheses and designing research methods and techniques to test predictions.
Offered: Spring

**CSP 379 GERIATRIC MENTAL HEALTH PRAC**

**CSP 382 RESEARCH ON ANTISOCIAL BEHAVIOR**
This course will consist of participation in ongoing research on the causes and consequences of antisocial behavior in children and adolescents, with an emphasis on female populations. Students will also participate in a weekly lab meeting designed to promote knowledge of literature in this field, as well as to learn more about specific topics of interest.
Offered: Fall Spring

**CSP 382W RESEARCH ON ANTISOCIAL BEHAVIOR**
Fulfills Upper-Level Writing Requirement

**CSP 383 MORAL DEVELOPMENT**
This seminar focuses on the psychological study of moral development. Different theoretical approaches to morality and related empirical research are discussed. The primary focus is from a developmental psychology perspective, but philosophical and educational issues also are considered.
Offered: Fall

**CSP 383W MORAL DEVELOPMENT**
Fulfills Upper-Level Writing Requirement

**CSP 384 PRACTICUM IN DEVELOPMENTAL DISABILITIES**
Explores educational, therapeutic, and social challenges in developmental disabilities. Students spend approximately eight hours per week in a supervised educational or treatment setting as well as participate in weekly meetings to review and discuss general issues in the field.

**CSP 385 PRACTICUM IN DEVELOPMENTAL DISABILITIES**
Explores educational, therapeutic, and social challenges in developmental disabilities. Students will spend approximately 8 hours per week in a supervised educational or treatment setting as well as participate in weekly meetings to review and discuss general issues in the field.
Offered: Spring

**CSP 385W PRAC IN DEVELOP DISABILITIES**

**CSP 387 SOCIAL PSYCHOPHYSIOLOGY**

**CSP 387W RESCH ON ANTISOCIAL BEHAV II**
CSP 390 SUPERVISED TEACHING

CSP 391 INDEPENDENT STUDY

CSP 391W INDEPENDENT STUDY

CSP 392 PRACTICUM

CSP 394 INTERNSHIP

CSP 395 HONORS SEMINAR

CSP 396 RELATIONSHIPS RESEARCH
Consideration of recent experimental and theoretical contributions in several selected areas of psychology.

CSP 396W RESEARCH: FAMILY PSYCHOLOGY

CSP 398 RESEARCH IN MOTIVATION
Offered: Fall Spring

CSP 465 COMPETENCE&MOT:DEV COUNTRIES

CSP 491 MASTER'S READINGS

CSP 493 MASTER'S SPECIAL TOPICS

CSP 495 MASTER'S RESEARCH

CSP 501 ETHICAL ISSUES IN CLINICAL PSYCHOLOGY
Psychologists have multiple sets of responsibility with information, and these are defined in this course. Individuals' rights to privacy underlie ethical principles of confidentiality and the legal concept of privileged communication; informed consent requires that disclosure to a psychologist occur in circumstances that are regulated and mutually understood. Under specific situations, defined ethically or legally, information may or must be shared with others. Through readings and discussion the course examines the ethical, professional, and legal principles that govern the use of information in practice, teaching, and research in psychology.
Offered: Fall

CSP 502 COGNITIVE FNDTNS OF BEHAVIOR
Knowledge of cognitive science, theories of learning, memory, and factors that influence an individual's cognitive performance. Current theories and research in classical and operant conditioning, learning, memory and attention, psychophysics, masking, signal detection theory, language, issues, and emerging methodologies in cognitive science.
Offered: Fall

CSP 504 DATA ANALYSIS I
Issues of data analysis in experimental research. The course focuses on parametric techniques, specifically analysis of variance. Topics covered include simple and complex designs for between and within subjects factors, including mixed designs; analysis of covariance and trend and contrasts. The course includes a lab in which students are taught to use a popular statistical package for data analysis.
Offered: Fall

CSP 509 SEMINAR IN PSYCHOTHERAPY

CSP 515 HIERARCHICAL LINEAR MODELING
CSP 516  STRUCTURAL EQUATN MODELING I

CSP 517  STRUCTURAL EQUATION MODEL II
This course will build upon methods covered in Structural Equation Modeling I by covering advanced topics in SEM including advanced applications for growth modeling, categorical latent variable (mixture) modeling in cross-sectional and longitudinal modeling settings, and growth mixture-modeling.

CSP 519  DATA ANALYSIS:GEN LIN APP 11

CSP 520  PSYCHOLOGY OF RELIGION

CSP 523  POS YOUTH DVLPMT:CHILD/ADOL

CSP 525  POS YOUTH DVLPMT:CHILD/ADOL

CSP 551  SOCIAL COGNITION

CSP 552  HUMAN MOTIVATION & EMOTION
The course focuses on the current field of human motivation and emotion, reviewing various theories and research programs, and covering related work in personality, cognition, learning, and performance, including operant and drive theories.

CSP 553  SEMINAR IN SOCIAL PSYCHOLOGY
An advanced overview of the field. Attitudes, interpersonal influence, attraction, aggression, social comparison, leadership, prejudice, and methodology

CSP 555  CLOSE RELATIONSHIPS

CSP 556  DIVERSITY

CSP 557  AFFECTIVE BASES OF BEHAVIOR

CSP 560  FAMILY PROCESSES IN CHILDHOOD

CSP 561  TOP IN SOCIAL PSY RESEARCH
CSP 561 fulfills two objectives. The class is the venue for Social/Personality graduate students to fulfill the formal research project requirement outlined in the CSP Handbook (more commonly known as the Two-Year Project). The class is also a forum for graduate students to meet regularly to discuss research issues and professional matters.

CSP 562  DEVELOPMENTAL RESEARCH METHODS

CSP 563  ADOLESCENT DEVELOPMENT

CSP 565  EARLY CHILD DEVELOPMENT

CSP 569  DEVELOPMENTAL THEORY & RESEARCH

CSP 570  CLINICAL ASSESSMENT I

CSP 571  CLINICAL ASSESSMENT II

CSP 572  INTRODUCTION TO CLINICAL RESEARCH METHODS

CSP 573  CULTURE&DIVERSITY AWARENESS
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<td>HISTORY &amp; SYSTEMS OF PSYCHOLOGY &amp; PSYCHOTHERAPY</td>
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<td>CSP 575</td>
<td>PSYCHOPATHOLOGY I</td>
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<td>Examines psychopathology of childhood and adulthood from a developmental perspective that encompasses the study of both normal and abnormal development. Topics covered include: taxonomic, definitional, and epidemiological issues; mental retardation; autism; child maltreatment; affective disorders; schizophrenia; resilience; and ethical considerations in conducting research.</td>
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<td>PSYCHOPATHOLOGY II</td>
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<td>Offered: Spring</td>
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<td>CSP 577</td>
<td>RESEARCH SEMINAR IN MOTIVATN</td>
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<td>CSP 578</td>
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<td>CSP 582</td>
<td>PRACTICUM IN DEVELOPMENTAL PSYCHPATHOLOGY</td>
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CSP 995 CONT OF DOCTORAL ENROLLMENT

CSP 997 DOCTORAL DISSERTATION

CSP 997A DOCT DISSERTATION IN ABSENTIA

CSP 999 DOCTORAL DISSERTATION

CSP 999A DOCTORAL DISSERTATION IN ABSENTIA

CSP 999B PHD IN-ABSENTIA ABROAD

CVS 110 NEURAL FOUNDATIONS OF BEHAVIOR
Introduces the structure and organization of the brain, and its role in perception, movement, thinking, and other behavior. Topics include the brain as a special kind of computer, localization of function, effects of brain damage and disorders, differences between human and animal brains, sex differences, perception and control of movement, sleep, regulation of body states and emotions, and development and aging.
Offered: Fall Spring Summer

CVS 151 PERCEPTION & ACTION
Explores how the biology of our senses shapes perceptual experiences of reality. Emphasizes sense of sight primarily and hearing secondarily. An important theme is that our sensory systems play a crucial role in the execution of coordinated movements of our bodies, as we navigate in, and interact with, the environment.
Offered: Fall

CVS 208 LAB IN PERCEPTION & COGNITION
Introduces behavioral and psychophysical studies of perceptual and cognitive phenomena. Students perform, analyze, interpret, and report results from experiments that move from reproducing classic phenomena to conducting new studies independently.
Offered: Spring

CVS 220 THE INTELLIGENT EYE
Provides an interdisciplinary view of modern research into how the human brain solves the problems involved in perception, including how we perceive the three-dimensional structure of the world, how we recognize objects and how visual information is used to control action in the world. Students read contemporary research and, through classroom discussion and critical essays, explore and analyze the questions and debates that define contemporary perceptual science.
Offered: Spring

CVS 245 SENSORY & MOTOR NEUROSCIENCE
Focuses on how single neurons and populations of neurons represent sensory information, how sensory signals are transformed and decoded to mediate perception, and how perceptual signals are converted into neural commands to initiate actions. Explores how simple behaviors (such as detection and discrimination) can be quantified and explained in terms of neural activity.
Introduces students to quantitative approaches for linking neural activity to perception and decision-making. Emphasizes studies of the visual, oculomotor, and somatosensory systems, with some attention to the auditory and vestibular systems as well.
Offered: Spring

CVS 391 INDEPENDENT STUDY

CVS 395 RESEARCH IN VISUAL SCIENCE

CVS 491 MASTER'S READINGS

CVS 493 MASTER'S SPECIAL TOPICS
CVS 495 MASTER'S RESEARCH

CVS 504 SENSORY SYSTEMS

CVS 505 PERCEPTION & MOTOR SYSTEMS

CVS 524 ADVANCED PROBLEMS IN PERCEPTION & ACTION

CVS 528 SPECIAL TOPICS IN VISION
Offered: Fall Spring

CVS 591 PHD READINGS

CVS 595 PHD RESEARCH

DAN 101 WORLD DANCE: MOVEMENT AS CULTURE
Exploration of world cultures through dance. Dance literacy through movement and embodied dance history. Investigates historical and anthropological significance of dance as well as provides an experience of the movement qualities of different world cultures.
Offered: Fall

DAN 102 FUNDAMENTALS OF MOVEMENT
Movement through the use of technique and improvisation. Emphasizes spontaneity, joy in moving, self-awareness and is based on experiential anatomy and developmental movement patterns. Provides strong foundation for further study in dance, theater, or sports. No previous dance training required.
Offered: Fall Spring

DAN 104 CONTACT IMPROVISATION I
Rooted in dance, martial arts and studies of body development and awareness. A duet form where partners use weight, momentum, and inertia to move each other freely through space. Solo and duet skills, rolling, falling, balance, counter-balance, jumping, weight sharing, spirals explored. Skill work combined with more open dancing in a supportive and focused environment. No previous dance training required.
Offered: Fall

DAN 110 BEGINNING DANCE TECHNIQUES (JAZZ, BALLET AND MODERN)
Introduction to dance technique, specifically in Jazz, Ballet and Contemporary Modern Dance. Emphasis will be on the development of basic skills, energy, strength, control, breath, alignment, continuity and connectivity, and rhythmic and bodily awareness. No prior training is necessary or expected.
Offered: Spring

DAN 114 INTRODUCTION TO YOGA
Yoga is defined as “union”, the uniting together of ourselves in all aspects- body, mind, heart, spirit. This class introduces the student to a hatha yoga method which integrates a dynamic and engaging approach to living through practicing “on and off the mat.” The goal of this class is to learn how to create a deeper, more enlivened relationship to one’s self through honoring one’s abilities and limitations, while growing one’s skills and sensitivity in the supportive environment of the class community. Students will engage with principles of attitude, alignment and action in a full range of hatha yoga poses, breathing techniques, readings on yoga philosophy, reflection, journaling and discussion. Through this ongoing process, students of yoga are encouraged to cultivate a more expansive and clear perception of self and others. Attendance in selected workshops and performances are required.
Offered: Fall Spring

DAN 115 MOVING INTO STILLNESS
The aim of this course is to discover the benefits of slowing down amid the constant motion of daily life. Each class will be experiential in nature. In addition to class discussions, students will be guided in meditation techniques, restorative yoga, and other mindfulness practices. Regular reading and writing assignments will give students the opportunity to apply ancient teachings, contemporary thought, and scientific research to gain insight into their life experiences and develop tools for personal growth.

Offered: Spring

DAN 116 INTRODUCTION TO CONTEMPORARY BALLET
Contemporary Ballet will approach ballet technique through the lens of somatic practices and will focus on providing a strong technical base. Phrasing, musicality and efficiency of movement will be emphasized. Provides a theoretical context, looking at ballet history and art and culture in society.

Offered: Fall

DAN 130 CONDITIONING FOR DANCER & ATHLETE
Body conditioning aimed to develop and strengthen specific musculature as it pertains to physical demands of dancers, athletes, martial artists, as well as those who wish to explore a mindful, physical and anatomically sound practice. Will introduce fundamental strength training based in Pilates, hands-on bodywork and basic movement sequences designed to help prevent injury as well as build core strength, endurance, coordination and overall physical mobility and stability.

Offered: Spring

DAN 135 WAYS OF SEEING: DRAW & DANCE

DAN 140 TAP DANCE: BEGINNING
Development of basic skills, energy, strength, control, continuity, and rhythmic and bodily awareness through the teaching of rhythm tap dance. No previous tap dance experience is expected.

Offered: Spring

DAN 145 BEGINNING JAZZ TECHNIQUE

DAN 150 BEGINNING CONTEMPORARY DANCE TECHNIQUE
Focus is on contemporary dance, a form that is an evolving exploration of expression through movement. It will blend the challenges of full-bodied, momentum-driven dancing with a sense of one's own self-awareness and discovery. Through rigorous dancing, move beyond not only physical, but also artistic boundaries and dimensions.

Offered: Spring

DAN 160 DANCE IMPROVISATION
This course is designed for those with some experience in dance who wish to explore mechanisms for generating movement and dance through improvisation. It works with theoretical concepts based in (but not limited to) Forsythe Improvisation Technologies, Anne Bogart's Viewpoints, fundamentals of Laban Movement Analysis and other cultural forms of performing arts in the pursuit to understand improvisation as practice, technique, conditioning, performance and composition. Supporting inspiration and freedom for the exploration of artistic expression and development is at the forefront of this class.

Offered: Spring

DAN 171 CAPOEIRA: BRAZILIAN ART MOVEMENT
An art form of self-defense with aerobic and dance elements that brings together a harmony of forces. Through history, movement and culture, students gain self-confidence, power, flexibility, endurance, and tools towards self-discovery. Open to all, Capoeira balances the body, mind, and soul and enables one to break through limits, revitalizing oneself for everyday life.

Offered: Fall

DAN 181 WEST AFRICAN DANCE FORMS I
Dynamic dance traditions of Guinea, West Africa. Accompanied by live music, students learn footwork and movements for several rhythms and acquire familiarity with the physical stance common to many styles of West African dance. Learn to execute
movements together with the rhythmic foundation provided by our drummers and become familiar with the origins and cultural significance of each dance, and the songs that accompany them.

Offered: Fall Spring

**DAN 182 WEST AFRICAN DANCE FORMS 1A**
A continuation of Dance 181.
Offered: Fall Spring

**DAN 188 HIP HOP CULTURE & BREAKING**
Originated in the boroughs of New York City, hip hop has grown to become a global phenomenon, influencing the lives of countless individuals with the core ideals of peace, unity, love and having fun. The class will provide a look into the historical origins and social importance of hip hop culture. The main focus will be on the original dance of hip hop culture - breaking, (also known as bboying). The class format is geared towards physical movement along with lectures, videos and opportunities to attend events in the community.
Offered: Spring

**DAN 189 HIP HOP CULT & BREAKING IA**

**DAN 190 MIDDLE EASTERN DANCE: FOLKLORIC/BEDOUIN**
Traditional Folkloric roots of Middle Eastern Dance, focusing on specific Bedouin dance styles of North Africa (Raks Shaabi). Discourse and research will address issues of gender and body image. Improving strength, flexibility and self-awareness of the body, the class work will include meditative movement, dance technique, choreography and improvisation. No prior dance experience necessary.
Offered: Spring

**DAN 203 CONTACT IMPROVISATION II**
A continuation of DAN 104 that is taught concurrently with the introductory course. Students in DAN 203 will gain a deeper experiential and intellectual knowledge of contact by exploring issues further. Work includes both more advanced practice with other DAN 203 students, and the experience of helping teach the DAN 104 students the basic principles of contact.
Offered: Fall

**DAN 204 CONTACT IMPROVISATION & CULTURE**
Rooted in dance, the martial arts and studies of body development and awareness, students will use weight, momentum, and inertia to move each other freely through space. Solo and duet skills such as rolling, falling, balance, counter-balance, jumping, weight sharing, and spirals will be explored to facilitate open dancing. Reading and writing assignments will explore the history and practice of contact improvisation and how it deals with physical ability, gender, social connection, and the student’s relationship to their own culture. Classes will primarily involve physical movement, but some time will be spent on discussion of the class exercises, readings, and personal experiences.
Offered: Spring

**DAN 208 TAI CHI: MOVEMENT ART & CULTURE**
A traditional Chinese martial art and its intimate relationship to the cosmological, physiological, and philosophical conceptions found in the culture and thought from which it emerged. Cross training exercise for the dancer or athlete and provides training for relaxed strength, whole body coordination, balance, centered alignment, timing, weight shifting and moving with fluid grace.
Offered: Fall

**DAN 209 QIGONG WAY TO HEALTH**
Qi Gong is a ancient Chinese internal art and an early forerunner of Tai Ji Quan. It is an Eastern Movement Discipline (EMD) which embodies a holism of Eastern martial arts and Eastern meditation. This course is a study of the philosophical roots, mindful practices and physical movements of Qi Gong in order to better understand and attain the integration of body, mind, and spirit. Topics will include traditional Chinese cultural concepts such as Yin-Yang theory, Five Element theory and Qi theory and their potential inclusion in modern Western culture. Qi Gong provides the dancer and athlete with healthy lifestyle practices
and fitness training for better breathing, body awareness, focus and concentration, mental presence, imagery, and cultivating and expressing energy flow.

Offered: Fall Spring

**DAN 211 TAI CHI EXPLORATIONS**

Dancers, musicians, actors, painters, philosophers, poets, warriors, healers, and artists of every discipline historically have utilized the Chinese internal arts of Tai Chi and Qi Gong as tools for the mobilization of qi, or energy, in order to achieve health, healing, and mind-body-spirit integration. This course combines movement, meditative, and breathing exercises and traditional forms with readings, video viewings, creative exercises, exploratory projects, and discussions of literature and philosophy to explore how the practice and philosophy of these transformative arts can lead to mental and physical balance, body-mind integration, self-discovery, creative expression, and peak athletic and enhanced artistic performance. (Four Credit Hours)

Offered: Spring

**DAN 212 NGOMA: DRUM-DANCE & RIT S AFR**

**DAN 213 JAZZ DANCE**

Vernacular jazz movement as it relates to jazz music and its historical context. Stylistically eclectic courses will blend the challenges of full-bodied, culturally influenced dancing with a sense of one's own self. Development of basic skills, energy, strength, control, continuity, and rhythmic and bodily awareness.

Offered: Fall

**DAN 216 YOGA & EXPERIENTIAL ANATOMY**

Yoga asanas (postures) act as a unifying hub for learning about and experiencing the human anatomical system. Variety of other movement and meditation disciplines will complement this process. Delving experientially into bones, muscles, organs, nervous system, and bio-energetic theories will bring deeper awareness to the exploration of the yoga asanas, as well as to our daily functional movement.

**DAN 225 YOGA II: CONTINUING THE JOURNEY**

Yoga is described as both a process, a journey and a goal. In this Anusara based method, continuing yoga students will learn how to extend and refine their skills and learn more fully what it means to live yoga, both “on and off the mat.” Through a steady engagement of the practices of asana, pranayama, reflection and journalling, the student will cultivate a deeper relationship to self and others, while enjoying the support of the “kula” or community. The process of yoga requires self-effort to attain the goal of self-awareness, and it is a journey filled with discovery, fresh perspectives and potential joy. Students will continue their explorations of biomechanics, the principles of attitude, alignment and action, yoga philosophy, and participate in assigned readings, discussion and journalling. Attendance in selected workshops and performances are required.

Offered: Fall Spring

**DAN 226 YOGA III: DEEPENING THE PRACTICE**

This class is designed to meet the needs of students who already have an ongoing practice of hatha yoga and are interested in stepping more deeply into the refinements of asana and pranayama, as well as reflection, understanding and assimilation of the concepts and teachings of yoga philosophy. Students will continue to enhance and grow their technical skills using principles of alignment and engagement which are both scientific and artful. While building more physical strength and suppleness, students will also establish a more steady foundation of understanding in how to embody and practically apply the knowledge gained from what they are reading, learning and journaling about.

Offered: Spring

**DAN 230 LIVING YOGA, LIVING ANATOMY**

Freshly experience inhabiting a human body and its postural alignment through the deep work of noticing and embracing anatomical processes. A counter-pose to the pressures of college life, discover embodiment as a resource for self-awareness, support, ease, and stress relief. Show up, slow down, pay attention, meditate, feel, sense, and relax. Explore form and the nature of mind through yogic practices. Color anatomical drawings, read about human structures, write responses, reflect on one’s unique living anatomy, and adopt simple daily practices outside of class. Students will meet with the instructor to design a project based on their distinct interests and needs.
Offered: Spring Summer

**DAN 240 TAP DANCE: INTERMEDIATE**
Expand upon your tap dance foundation. Discover techniques essential for the study of Rhythm Tap Dance including subtle weight shifts, articulate footwork, and dynamics. Explore the physical interpretation of rhythm through the art of tap dance and the practice of improvisation.
Offered: Fall

**DAN 243 DANCE ON CAMERA/CAMERA DANCE**
Students will create and perform multi-media site-specific choreography and installations that will be captured and re-mixed. Geared for students of dance, film and photography, this course will explore creative collaboration, composition, lens based art and post-production. Students will be encouraged to curiously and playfully embody manipulations of movement material and play with technology to better understand different points of view and to explore the elements of site, space, shape, time and effort to see how they affect quality and content. Students will gain hands-on experience with digital photo and video equipment and editing software, and will serve roles both in front of and behind the camera. $50 Equipment Usage Fee.
Offered: Fall

**DAN 245 DANCE THERAPY FOUNDATIONS**
Foundations and Principles of Dance/Movement Therapy examines the ways dance/movement therapy in the west has integrated Asian concepts, natural movement, formal elements of dance, creative processes, music, verbal expression, and constructs drawn from psychology and counseling to treat a wide range of populations. Students will compare and contrast the treatment of individuals seeking help for a range of concerns (e.g., psychosis, autism, anxiety, eating disorders, histories of abuse). Experientials, creative dance, and videotapes of actual sessions with a variety of populations highlight these concepts. Dress comfortably and be prepared to move.
Offered: Fall

**DAN 250 INTERMEDIATE CONTEMPORARY DANCE: CONTEXT & PRACTICE**
Dance appreciation and technical practice. Practice contemporary dance experientially through examining movement principles and exploring choreographic combinations. Investigate context, history, applications and societal impact of Modern and Contemporary dance. Hone skills of observation, movement analysis and interpretation of dance as an art from a personal perspective as well as within a larger cultural and historical framework.
Offered: Fall

**DAN 251 INTERMEDIATE/ADV JAZZ DANCE: CONTEXT & PRACTICE**
Vernacular jazz movement and its relationship to jazz music through dance appreciation, movement observation and technical practice. Investigates the context, history, applications and societal impact of jazz dance. Elements of jazz, embodiment of rhythm, disciplining the body to move with clarity and in accordance with sound anatomical principles and cultural influence.
Offered: Spring

**DAN 252 INTERMEDIATE BALLET: CONTEXT AND PRACTICE**
Dance appreciation and technical practice. Practice classical ballet technique and theory with a contemporary perspective and investigate context, history, applications and societal impact of Ballet. Phrasing, musicality and efficiency of movement will be emphasized.
Offered: Spring

**DAN 253 WEST AFRICAN DANCE: CONTEXT & PRACTICE**
Experience dancing African styles from traditional cultures of Guinea, West Africa, as well as studying cultural history and context from which and in which they are practiced and performed. Technical emphasis will focus on musicality and complex choreographic arrangement. Students will practice dances and drum songs. Required outside work includes performance attendance, video viewing, text and article analysis, research and written work.
Offered: Spring
**DAN 267 INTERM/ADVANCED CONTEMPORARY DANCE**
Continuing technical development and comprehension and integration of theory into practice is the focus in this course. Students will practice contemporary dance experientially through examining dance concepts influenced by Laban/Bartenieff theories and by exploring complex choreographic combinations. Classes will explore continuity and connectivity, patterns of total body organization, efficiency of movement, momentum, musculo-skeletal anatomy, strength, alignment, gravity and weight, rhythm and somatic practices to develop and improve technical skills. We will also investigate subtlety and individual expression in performance. Pre-requisite: DAN 250: Interm.Contemporary Dance: Context and Practice
Offered: Fall

**DAN 268 INTERMEDIATE/ADV CONTEMPORARY BALLET**
Practice and performance of classical and contemporary ballet with a contemporary approach in order to serve the dancer of any style of movement. Within the ballet form, classes will explore efficiency of movement, breath, anatomical mechanics, strength, alignment and through-line, weight, rhythmic accuracy, clarity of space, shape and effort, and somatic practices to develop and improve technical skills.
Offered: Spring

**DAN 271 CAPOEIRA II: MUSIC & MOTION**
Deeper study of Capoeira. This second level will find students continuing to build strength, coordination, rhythm, and balance. Students will also become further involved with the instrumentation of Capoeira. Readings and discussions will explore into historical events and look at Capoeira and it's Afro-Brazilian spirituality, liberation and cultural revolution throughout the ages. Each class involves daily physical and music training.
Offered: Spring

**DAN 273 CAPOEIRA:STRATEGIES&IMPROV**

**DAN 278 CHOREOGRAPHY**
Experiments with various methods of making dances including improvisational structures. Elements of time, space, energy, shape effort are investigated, along with the concepts of abstraction, metaphor, and musicality. The class draws from diverse sources and disciplines to stimulate creativity, exploration, and craft.
Offered: Spring

**DAN 280 GUINEA’S CULTURAL REVOLUTION**

**DAN 281 WEST AFRICAN DANCE FORMS II**
The focus is on the increasingly complex dance repertoires of Ghana and Guinea, West Africa. A more specified investigation of regional context and cultural function of the dances are emphasized. Repertoire dances include Sinte, Kassa, Yamama, & Somuninku from Guinea and Adowa, Slow Agbekor, & Gahu from Ghana.

**DAN 283 WEST AFRICAN DANCE & DUNDUN**
Taught by a long-time member of Les Ballets Africains, the national ballet of Guinea, instructor Fana Bangoura will introduce students in this course to dynamic dance traditions of West Africa and will join with them the power of percussion. Students will also become familiar with the origins and cultural significance of each dance, and the songs that accompany them. By breaking down the drum parts alongside the traditional dance movements, students experience dancing and drumming in perfect unison. This opportunity is geared for both drummers and dancers and is highly recommended for all skill levels.
Offered: Spring

**DAN 290 MIDDLE EASTERN DANCE:ORIENTALE**
Improve strength, flexibility and self-awareness of the body. Includes meditative movement, dance technique, improvisation and rhythm identification through music and drumming. Dance forms such as Egyptian, Turkish, and American Tribal will be taught. Traditional costuming will be addressed. History, art, and culture from these countries will be explored and experienced. Discourse and research topics will explore issues of gender, body image, historical perspectives and Orientalism.
Offered: Fall

University of Rochester
DAN 295 ART OF TEACHING DANCE
Practices and principles of teaching dance. Explore methods of teaching creative dance for children and cross-curricular lesson planning. Addresses how and why to teach dance in K-12. Pedagogical areas of study includes lesson and curriculum planning, concept development, assessment, delivery and development of teaching philosophy. Geared for both the student interested in arts in education and in the teaching of dance in a dance studio.
Offered: Spring

DAN 296 ART OF TEACHING DANCE: K-12
Designing movement-based lessons for K-12 curriculum. Pedagogical areas of study includes: lesson and curriculum planning, teaching methods, assessment, alignment with state and national teaching standards, and formulating a teaching philosophy. Students will have the opportunity to work directly with K-12 students developing, teaching, and evaluating lessons of their own design. Includes pedagogical theories such as Muska Mosston's Spectrum of Teaching Styles, Bloom's Taxonomy, Arthur L. Costa and Bena Kallick's Habits of Mind, and Howard Gardner's Multiple Intelligences. This course is geared for both the student interested in arts in education and in teaching creative dance.
Offered: Spring

DAN 350 LIVING DANCE & CREATIVE EXP

DAN 378 CHOREOGRAPHIC VOICE: DANCE & SOCIAL JUSTICE
In this course, students will study various choreographic works that address issues of social justice as thematic material, political activism, and historical reflection. Dialogue and readings on the social responsibility of the artist will frame a creative process and choreographic practice where students will also develop their own socially conscious choreography that will ultimately be presented and discussed in a public forum.
Offered: Fall

DAN 380 REPERTORY & PERFORMANCE
Classes are conducted in the form of professional dance rehearsals. Students will perform repertory material for the university community, Rochester Fringe Festival, the American College Dance Association conference, and more during the 2015-16 academic year. Additionally, students will engage in other vital behind-the-scene production elements. A lab is attached to the classes to enable sufficient rehearsal time and preparation. This year’s repertory will feature work by the Program of Dance and Movement’s faculty member, Anne Harris Wilcox. Wilcox will set her phantasmagorical Halloween dance/theater piece, When the Souls Rise, as well as an additional work by Wilcox. Audition: Friday, March 27th 2:00pm-3:15pm Spurrier Dance Studio Intermediate – Advanced dancers are encouraged to audition. *Enrollment in the 1 credit DAN 397 Dance Ensemble course in the spring, though not required, is highly recommended and will complete this 4-credit bundle for Creative Expression.
Offered: Fall

DAN 385 DANCE PERFORMANCE WORKSHOP
Within a choreographic process, students experience the creation of new work and/or repertory that will be adapted in order to draw on the unique artistry of each of the dancers. Experience a rehearsal process from beginning to end, addressing a variety of performance techniques and carrying out various production aspects of performance as well as performance itself in various public settings, most likely including the American College Dance Festival Association Conference in winter 2013. Pre-requisite: By audition or permission of instructor.
Offered: Fall

DAN 386 DANCE PERFORMANCE WK II
The primary focus of the course is to participate in the creative process and performance of a dance work or works, to be performed in a variety of settings. Conducted in the form of a professional dance rehearsal, dancers deepen their exploration of what it means to be an artist in performance. Each semester, students will experience a new process of choreography with distinct research and content from any past semester/s. Artistry, vitality, unpredictability and the expansion of awareness, awakening of senses and exploration of nuance will be addressed in the work.
Offered: Fall

DAN 387 DANCE PERFORMANCE WKSHP III
DAN 390 SUPERVISED TEACHING

DAN 391 INDEPENDENT STUDY

DAN 397 DANCE ENSEMBLE
As a follow-up to DAN 380 Repertory & Performance, this course will mainly be conducted in the form of a professional dance rehearsal, creating new work, learning and rehearsing repertory and performing in various public venues both on campus and off campus. Working with both the instructor as Choreographer/Collaborative Director and guest choreographers, students will diversify their own experiences as dancers and deepen their creative journeys as artists. Draft Description: Make Final Prior Descriptions
Offered: Spring

DAN 398 DANCE ENSEMBLE II

DH 501 DIG HUMANITIES-MELLON GRANT

DMS 101 INTRO DIGITAL MEDIA STUDIES

DMS 102 INTRO COMPUTING MULTIMEDIA
Students will learn introductory programming by writing programs that manipulate digital media including text, audio, graphics, and video, using the Python programming language. In parallel, students will explore Digital Media Studies through readings, discussions, and essays. No previous programming experience is required. It is expected that students will spend a significant amount of time outside of class on programming, reading, and writing.
Offered: Spring

DMS 103 ESSNTL DIGITAL MEDIA TOOLKIT
This course introduces students to current industry-standard software for creating, editing, and producing core Digital Media objects: photographs, video, GIS maps, 3D models, videogames, and websites/digital portfolios. The class will be project driven, drawing on application specialists and a new digital technologies lending collection to facilitate project development. By the end of the semester, you will be able to manipulate photographs and GIS, edit a short video, use a laser scanner and software to make and modify a 3D model, create a small interactive videogame environment, and present all these creations in a website or digital portfolio. This course substitutes for DMS 103: Human-Computer Interaction, which is no longer being offered.
Offered: Fall

DMS 111 INTRODUCTION TO DIGITAL ART

DMS 112 INTRODUCTION TO PHOTOGRAPHY

DMS 121 ART AND TECH OF RECORDING

DMS 122 LISTENING AND AUDIO PROD

DMS 123 SOUND DESIGN

DMS 140 INTRODUCTION TO SCULPTURE

DMS 141 INTRODUCTION TO SCULPTURE

DMS 142 INTRO TO STUDIO PRACTICE

DMS 201 AMERICAN INDEPENDENT CINEMA

DMS 211 CLOCKS AND COMPUTERS
DMS 212 POETICS OF TELEVISION
DMS 214 EXPANDED PHOTOGRAPHY
DMS 215 ADVANCED DIGITAL ART
DMS 221 ADVANCED VIDEO ART
DMS 232 ADVANCED DIGITAL ART
DMS 241 ADVANCED SCULPTURE
DMS 243 BOOKMAKING
DMS 244 MARKINGS, METHODS&MATERIALS
DMS 250 WRITING IN A DIGITAL WORLD
DMS 281 DANCE ON CAMERA/CAMERA DANCE
DMS 283 DIGITAL CITYSCAPES
DMS 284 CREATE A DOCUMENTARY
DMS 371 CAPSTONE
   Offered: Spring
DMS 372 CAPSTONE
   Offered: Fall
DMS 373 CAPSTONE
   Offered: Spring
DMS 390 SUPERVISED TEACHING
DMS 391 INDEPENDENT STUDY
DMS 394 INTERNSHIP
DMS 501 DIG HUMANITIES-MELLON GRANT
DSC 262 COMP INTRO TO STATISTICS
DSC 265 INTERMED STATISTICAL METHODS
DSC 450 DATA SCIENCE PRACTICUM
DSC 462 COMP INTRO TO STATISTICS
DSC 465 INTERMED STATISTICAL METHODS
DSC 530 METHODS IN DATA-ENABLED RESEARCH INTO HUMAN BEHAVIOR AND ITS COGNITIVE AND NEURAL MECHANISMS
This course provides a hand-on introduction to experimental and analytical methods in cognitive science and artificial intelligence. Each year, it offers three modules from a rotating list, including topics such as brain imaging, computational linguistics, and computer vision. The course is open to graduate students in any discipline. The course is recommended for those intending to pursue research in the intersection of cognitive science and computer science, but prior experience in those fields is not required. It is required for students supported by the BCS/CS NRT graduate training grant. For 2015, the modules are imaging and interpreting brain activity, large scale text corpus analysis, and sensing in the wild.

Offered: Fall

**DSC 531** PRACTICUM DATA-ENABLED

**EAS 101** INTRO TO BIOMEDICAL ENGR

See BME 101

**EAS 102** GREEN ENERGY

See CHE 150

**EAS 103** INTRO TO AUDIO MUSIC & ENGIN

See AME 140

**EAS 104** THE ENGINEERING OF BRIDGES

See ME 104

**EAS 105** INTRO TO OPTICS

See OPT 101

**EAS 106** THE SCIENCE OF PROGRAMMING

See CSC 171

**EAS 108** INTRO TO ELECTRICAL AND COMPUTER ENGINEERING

See ECE 101

**EAS 120** MICROELECTRONICS FOR THE CEO

NO LONGER OFFERED.

**EAS 141** BASIC MECHANICAL FABRICATION

This course will teach students the safe and effective use of basic machine tools such as lathes, mills, band-saws and drill presses. Students will complete a number of projects that utilize these principles. Grades will be based on the successful completion of these projects. A course paper will be a written documentation of the procedures necessary to complete one of the projects done during the class. The paper will be graded on content, organization and clarity.

Offered: Fall Spring

**EAS 300** INACTIVE STATUS-ENGINEERING

**EAS 392** INDUSTRY PRACTICUM

**EAS 398** INTERNSHIP

**EAS 448** WIRELESS SENSOR NETWORKS

**ECE 101** INTRODUCTION TO ELECTRICAL AND COMPUTER ENGINEERING

A general, high-level understanding of workings of modern computing systems from circuit, computing system architecture, to programming. ECE101 is not a required course. Lecture materials will eventually be covered in subsequent courses. It is intended
to introduce you to (a subset of) principle topics in computer system designs. There is an emphasis on hands-on experience to
give you a “feel” of the materials that will be discussed in more depth later on.
Offered: Fall

**ECE 111 INTRODUCTION TO SIGNALS & CIRCUITS**

Linear Algebra and Differential Equations, and Electricity and Magnetism, are co- or pre-requisites of this course. This course
serves to reinforce the Basic Science and Mathematics learned in those courses, as well as give concrete, engineering, examples
of how the techniques learned in those courses are applied to real problems. In addition, it serves to illustrate where and how
many of the equations studied in the Mathematics courses are originally developed. Many examples, homework problems, and
exam problems include the use of linear algebra and differential equations.
Offered: Fall

**ECE 112 LOGIC DESIGN**

Students are exposed to Combinational logic elements including all of the following: logic gates, Boolean algebra, Karnaugh
Maps, conversion between number systems, binary, tertiary, octal, decimal, and hexadecimal number systems, and arithmetic on
signed and unsigned binary numbers using 1’s and 2’s complement arithmetic. Also covered are programmable logic devices,
synchronous finite state machines, State Diagrams, FPGA’s and coding logic in VHDL.
Offered: Spring

**ECE 113 CIRCUITS & SIGNALS**

The principal focus of ECE113 is frequency domain representation of time signals, starting with phasors and ending with
elements of Fourier series and Fourier transforms. Mathematics is introduced as needed for the specific material being covered,
including: complex numbers, initial value problems, Laplace transform pairs, matrices, Fourier series, and Fourier transforms,
including convolution. In addition, some effort is devoted to non-linear circuit analysis using loadlines.
Offered: Spring

**ECE 114 INTRO TO C/C++ PROGRAMMING**

This course provides an introduction to the C and C++ programming languages and the key techniques of software programming
in general. Students will learn C/C++ syntax and semantics, program design, debugging, and software engineering fundamentals,
including object-oriented programming. In addition, students will develop skills in problem solving with algorithms and data
structures. Programming assignments will be used as the primary means of strengthening and evaluating these skills.
Offered: Fall Spring

**ECE 120 MICROELECTRONICS FOR THE CEO**

This course discusses the fundamentals of silicon - what its material properties are, how a transistor is formed, how the transistors
are integrated into “microelectronics”, how down-scaling the transistors increase their functionality and speed and what new
nano-technology lies ahead as we approach the end of the silicon road. Special “widget deconstruction” will address common
pieces of modern technology (e.g., Smart Phone, GPS) Student led discussions will examine the transformational impact of each
widget.
Offered: Spring

**ECE 140 Introduction to Audio and Music Engineering**

Provides an introduction to the science and technology of audio. Students will learn about the vibration of strings, musical tuning
systems, overtones and timbre, modes of oscillation through the concept of a guitar. Fourier analysis, transducers and passive
electrical components and circuits will be introduced when discussing amps and audio components. Hands on projects introduce
the fundamental concepts of electronics, including voltage, current, resistance and impedance, basic circuit analysis, ac circuits,
impedance matching, and analog signals. The course then introduces basic digital signal processing concepts, where they will
use Arduinos and Pure Data to learn about conversion of sound to digital format, frequency analysis, digital filtering and signal
processing and musical sound synthesis. AME140 is recommended as an introduction to the Audio and Music Engineering major
but is accessible to students of music or other non-technical disciplines who wish to learn the fundamentals of music technology.
Offered: Fall

**ECE 200 COMPUTER ORGANIZATION**
Instruction set principles; processor design, pipelining, data and control hazards; datapath and computer arithmetic; memory systems; I/O and peripheral devices; internetworking. Students learn the challenges, opportunities, and tradeoffs involved in modern microprocessor design. Assignments and labs involve processor and memory subsystem design using hardware description languages (HDL).

Offered: Spring

**ECE 201 ADVANCED COMPUTER ARCHITECTURE**

Offered: Fall

**ECE 204 MULTIPROCESSOR ARCH**
This course provides in-depth discussions of the design and implementation issues of multiprocessor system architecture. Topics include cache coherence, memory consistency, interconnect, their interplay and impact on the design of high-performance micro-architectures.

Offered: Spring

**ECE 205 ADV DIGITL DESIGN USING FPGA**
Review of complex embedded project development with Xilinx Virtex FPGA eval board and Xilinx CAD tools using Verilog HDL and C programming language. Embedded development and introduction to ethernet, USB, SATA, VGA, DVI, PS2, RS232, GPIO, and soft processor cores.

**ECE 206 GPU PARALLEL C/C++ PROGRAMMING**
GPU micro-architecture, including global memory, constant memory, texture memory, SP, SM, scratchpad memory, L1 and L2 cache memory, multi-ported memory, register file, and task scheduler. Parallel programming applications to parallel sorting, reduction, numeric iterations, fundamental graphics operations such as ray tracing. Desktop GPU programming using Nvidia's CUDA (Compute-Unified Device Architecture), CPU/GPU cooperative scheduling of partially serial/partially parallel tasks. No midterms or written exams. Course consists of seven hands-on projects using CUDA.

Offered: Fall

**ECE 207 Advanced GPU Programming and Cloud Computing**
In this course, advanced GPU parallel programming techniques are taught that permit extremely compute-intensive applications to be run in real-time on a cloud-based GPU cluster. These applications demand 100x to 1000x more compute power than a single CPU (or even a GPU) can provide, making it necessary to utilize the cloud for computation. An additional layer of complexity is introduced into the computational model when real-time response is required. Students will be exposed not only to the most challenging GPU parallel programming methods, but also the intricacies of running such compute-intensive applications through high-latency (and potentially unpredictable) communications links.

Offered: Spring

**ECE 210 CIRCUITS & MICROCONTROLLERS FOR ENGINEERS**
4 credit hour course, with laboratory, intended for physical scientists and (non-electrical) engineers. Electrical concepts will be developed based on modern needs and techniques: Current, Voltage, Components, Sources, Operational Amplifiers, Analysis Techniques, First and Second Order Circuits, Sinusoids and AC. Technical elective for non-ECE majors.

Offered: Spring

**ECE 216 MICROPROS & DATA CONVERSION**
Architecture of microprocessor and embedded micro-controller systems discussed including central processing unit, memory, bus structures (PCI, USB, CAN, IEEE488 Bus), I/O devices and programmable peripheral interface controllers. Also described are controller components including timer/counters, analog-to-digital converters, digital-to-analog converters, multiplexers, and interrupt structures.

Offered: Fall
**ECE 221** ELECTRONIC DEVICES & CIRCUITS


Offered: Fall

**ECE 222** INTEGRATED CIRCUITS: DESIGN & ANALYSIS


Offered: Spring

**ECE 223** SEMICONDUCTOR DEVICES


Offered: Fall

**ECE 224** INTRO CONDENSED MATTER PHY

See PHY 251

Offered: Fall

**ECE 227** Electric Power: Conversion, Transmission, and Consumption

We will describe how the principal sources of energy - coal, natural gas, impounded water (hydroelectric), and fissile materials - are exploited to create electric power, how it is transmitted and distributed through the grid and finally the patterns of its consumption. To assure that students gain a proper appreciation for the factors that determine the real cost of electricity per kilowatt-hour, the subject will be treated in a highly quantitative way. The goal will be to provide students with the information and tools they need for informed analysis of the true prospects and technological challenges involved in integration of new energy sources, such as solar, wind, geothermal, and tidal power, with the existing grid. There will be weekly homework and a midterm. Two projects with oral presentations, including a major one at the end of the semester, are required. There is no final exam. Several required field trips to local power facilities occur during the semester.

Offered: Spring

**ECE 230** ELECTROMAGNETIC WAVES


Offered: Fall

**ECE 231** ROBOT CONTROL

This course covers control and planning algorithms with applications in robotics. Topics include transfer function models, state-space models, root-locus analysis, frequency-response analysis, Bode diagrams, controllability, observability, PID control, linear quadratic optimal control, model-predictive control, stochastic control, forward and inverse kinematics, dynamics, joint space control, operational space control, and robot trajectory planning. Proficiency with Matlab/C++ is recommended.

Offered: Fall

**ECE 233** MUSICAL ACOUSTICS

Aspects of acoustics. Review of oscillators, vibratory motion, the acoustic wave equation, reflection, transmission and absorption of sound, radiation and diffraction of acoustic waves. Resonators, hearing and speech, architectural and environmental acoustics.
Offered: Fall

ECE 235 INTRODUCTION TO OPTOELECTRONICS
Introduction to fundamentals of wave propagation in materials, waveguides and fibers, generation, modulation and detection of light using semiconductor devices, and elements of optocommunication systems.

Offered: Spring

ECE 241 SIGNALS
Introduction to continuous and discrete time signal theory and analysis of linear time-invariant systems. Signal representations, systems and their properties, LTI systems, convolution, linear constant coefficient differential and difference equations. Fourier analysis, continuous and discrete-time Fourier series and transforms, properties, inter-relations, and duality. Filtering of continuous and discrete time signals. Sampling of continuous time signals, signal reconstruction, discrete time processing of continuous time signals. Laplace transforms.

Offered: Fall

ECE 242 COMMUNICATIONS SYSTEMS
In this course we will study the following topics: Amplitude and frequency modulations – bandwidth, power, complexity trade-offs, spectral analysis. Random processes and random variables – statistical averages, autocorrelation, covariance, probability distribution functions, covariance, basic probability. Noise in communication systems – compare the signal-to-noise ratio of different communication systems, pre-emphasis and de-emphasis filtering in FM systems. Analog to digital conversion – reconstruction filters, sampling theorems, pulse code modulations, differential pulse code modulations, delta modulations, and adaptive delta modulations. Binary communication systems – pulse position modulation, pulse amplitude modulation, optimum receiver of binary modulation systems, M-ary modulations.

Offered: Fall

ECE 244 DIGITAL COMMUNICATIONS
Digital communication system elements, characterization and representation of communication signals and systems. Digital transmission, binary and M-ary modulation schemes, demodulation and detection, coherent and incoherent demodulators, error performance. Channel capacity, mutual information, simple discrete channels and the AWGN channel. Basics of channel coding and error correction codes.

Offered: Fall

ECE 245 WIRELESS COMMUNICATIONS
This course teaches the underlying concepts behind traditional cellular radio and wireless data networks as well as design trade-offs among RF bandwidth, transmitter and receiver power and cost, and system performance. Topics include channel modeling, digital modulation, channel coding, network architectures, medium access control, routing, cellular networks, WiFi/IEEE 802.11 networks, mobile ad hoc networks, sensor networks and smart grids. Issues such as quality of service (QoS), energy conservation, reliability and mobility management are discussed. Students are required to complete a semester-long research project in order to obtain in-depth experience with a specific area of wireless communication and networking.

Offered: Fall

ECE 246 DIGITAL SIGNAL PROCESSING
Analysis and design of discrete-time signals and systems, including: difference equations, discrete-time filtering, z-transforms, A/D and D/A conversions, multi-rate signal processing, FIR and IIR filter design, the Discrete Fourier Transform (DFT), circular convolution, Fast Fourier Transform (FFT) algorithms, windowing, and classical spectral analysis.

Offered: Fall

ECE 247 DIGITAL IMAGE PROCESS
This course will introduce the students to the basic concepts of digital image processing, and establish a good foundation for further study and research in this field. The theoretical components of this course will be presented at a level that seniors and first year graduate students who have taken introductory courses in vectors, matrices, probability, statistics, linear systems, and computer programming should be comfortable with. Topics cover in this course will include intensity transformation and spatial filtering, filtering in the frequency domain, image restoration, morphological image processing, image segmentation,
image registration, and image compression. The course will also provide a brief introduction to python (ipython), the primary programming language that will be used for solving problems in class as well as take-home assignments.

Offered: Fall

ECE 251 ULTRASOUND IMAGING
Introduction to the principles and implementation of diagnostic ultrasound imaging. Topics include linear wave propagation and reflection, fields from pistons and arrays, beamforming, B-mode image formation, Doppler, and elastography. Project and final report

Offered: Fall

ECE 261 INTRODUCTION TO VLSI
Introduction to high performance integrated circuit design. Semiconductor technologies. CMOS inverter. General background on CMOS circuits, ranging from the inverter to more complex logical and sequential circuits. The focus is to provide background and insight into some of the most active high performance related issues in the field of high performance integrated circuit design methodologies, such as CMOS delay and modeling, timing and signal delay analysis, low power CMOS design and analysis, optimal transistor sizing and buffer tapering, pipelining and register allocation, synchronization and clock distribution, retiming, interconnect delay, dynamic CMOS design techniques, power delivery, on-chip regulators, 3-D technology and circuit design, asynchronous vs. synchronous tradeoffs, clock distribution networks, low power design, and CMOS power dissipation.

Offered: Fall

ECE 262 ADVANCED CMOS VLSI DESIGN
Senior design course for "Computer Design" or "Integrated Electronics" concentrations. Review of CMOS Subsystem design. Design focus on digital or mixed-signal systems, such as a simple microprocessor, a self-timed multiplier, a digital filter, data converter, or memory. Project design requirements include architectural design, logic and timing verification, layout design, and test pattern generation. Extensive use of CAD tools. The resulting VLSI chips may be fabricated.

Offered: Spring

ECE 266 RF AND MICROWAVE INTEGRATED CIRCUITS
This course involves the analysis and design of radio-frequency (RF) and microwave integrated circuits at the transistor level. We begin with a review of electromagnetics and transmission line theory. Several design concepts and techniques are then introduced, including Smith chart, s-parameters, and EM simulation. After the discussion of RLC circuits, high-frequency narrow-band amplifiers are studied, followed by broadband amplifiers. Then we examine the important issue of noise with the design example of low-noise amplifiers (LNA). Nonlinear circuits are studied next with the examples of mixers. A study of oscillators and phase noise follows. Afterwards we introduce phase-locked loops (PLL) and frequency synthesizers. The course concludes with an overview of transceivers architectures. The course emphasizes the development of both circuit design intuition and analytical skills. There are bi-weekly design labs and a term project using industry-standard EDA tools (ADS, Asitic, etc.).

Offered: Spring

ECE 269 HIGH SPEED INTEGRATED ELECTRONICS
We begin with an overview of high speed semiconductor technologies (CMOS, SiGe, SOI, GaAs, InP, etc) and devices (MOSFET, MESFET, HEMT, HBT, and tunneling diodes), followed by discussion of device characterization and technology optimization for circuit performance. We focus on the design of wideband and high power amplifiers, which includes discussions on feedback, impedance matching, distributed amplifiers, power combining, and switching power amplifiers. The third part of the course involves the design of high speed phase locked and delay-locked loops (PLL and DLL). After a review of PLL basics, we discuss its building blocks: VCO, frequency divider, phase detector, and loop filter. We also analyze its performance, in particular phase noise, jitter, and dynamic performance, and how to improve them. Two important applications, frequency synthesis and clock recovery, serve as the examples in our discussion. Each part of the course also includes related simulation methods and measurement techniques.

Offered: Fall

ECE 271 COMP MODELS OF MUSIC
NO LONGER OFFERED
<table>
<thead>
<tr>
<th>Course Code</th>
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<tr>
<td>ECE 272</td>
<td>AUDIO SIGNAL PROCESSING</td>
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|             | This course is a survey of audio digital signal processing fundamentals and applications. Topics include sampling and quantization, analog to digital converters, time and frequency domains, spectral analysis, vocoding, digital filters, audio effects, music audio analysis and synthesis, and other advanced topics in audio signal processing. Implementation of algorithms using Matlab and on dedicated DSP platforms is emphasized.  
Offered: Spring |
| ECE 274     | BIOMED SENSORS,CIRCUITS&INTR |
|             | See BME 274 |
| Offered: Spring |
| ECE 277     | COMPUTER AUDITION |
|             | Computer audition is the study of how to design a computational system that can analyze and process auditory scenes. Problems in this field include source separation (splitting audio mixtures into individual source tracks), pitch estimation (estimating the pitches played by each instrument), streaming (finding which sounds belong to a single event/source), source localization (finding where the sound comes from) and source identification (labeling a sound source). |
| ECE 292     | SILICON WORLD |
|             | This course discusses the fundamentals of silicon - what its material properties are, how a transistor is formed, how the transistors are integrated into “microworlds”, how down-scaling the transistors increase their functionality and speed and what new nano-technology lies ahead as we approach the end of the silicon road. Special “widget deconstruction” will address common pieces of modern technology (e.g., Smart Phone, GPS) Student led discussions will examine the transformational impact of each widget.  
Offered: Spring |
| ECE 294     | AUDIO DSP PORTFOLIO - LAB |
|             | This is a follow on course to AME272, Audio Digital Signal Processing. Students will complete a major design/build project in the area of audio digital signal processing in this course. Examples include a real-time audio effects processor, music synthesizer or sound analyzer or other projects of student interest. Weekly meetings and progress reports are required.  
Offered: Fall |
| ECE 349     | SENIOR DESIGN |
|             | Senior design course. Prior faculty approval required or design project proposal.  
Offered: Spring |
| ECE 386V    | VISITING STUDENT IN ECE |
| ECE 391     | INDEPENDENT STUDY |
| ECE 391W    | INDEPENDENT STUDY |
| ECE 392     | SPECIAL TOPICS |
| ECE 393     | SPECIAL ESSAY |
| ECE 394     | INTERNSHIP |
| ECE 395     | SPECIAL PROJECTS |
| ECE 396     | SPECIAL PROJECTS |
| ECE 398     | DESIGN SEMINAR |
Students majoring in Electrical and Computer Engineering will take this course at the same time as their concentration elective and prepare a proposal for the Design Project to be started in the Fall semester and completed in the Spring semester. Students and Instructor will consult with design project supervisors in various areas to devise a project plan. Proposal might include presentations and documentation discussing the following: definition of project requirements and product specifications; clarification and verification of end user requirements; subsystem definition and interfaces; generation of project and testing plans including Gantt charts; reliability analysis, product safety, compliance issues, manufacturability, reverse engineering a comparable device, cost, and documentation.

Offered: Fall

ECE 399 JUNIOR SEMINAR
Case studies on ethical, social, economic and safety considerations that can arise in engineering practice, along with preliminary planning for Capstone Design Projects. Occasional presentations by outside speakers.

Offered: Spring

ECE 400 COMPUTER ORGANIZATION
SEE ECE 200

Offered: Spring

ECE 401 ADVANCED COMPUTER ARCHITECTURE
Instruction set architectures. Advanced pipelining techniques. Instruction level parallelism. Memory hierarchy design. Multiprocessing. Storage systems. Interconnection network

Offered: Fall

ECE 402 MEMORY SYSTEMS
Advanced topics in the organization, architecture, and implementation of modern memory subsystems. Power, performance, reliability, and QoS issues in DRAM memory systems and Flash-based SSDs; high-performance memory controllers and interfaces; memory system design for data centers and enterprise systems.

Offered: Fall

ECE 404 Multiprocessor Architecture
This course provides in-depth discussions of the design and implementation issues of multiprocessor system architecture. Topics include cache coherence, memory consistency, interconnect, their interplay and impact on the design of high-performance micro-architectures.

Offered: Spring

ECE 405 ADV DIGITAL DESIGN USING FPGA
Review of complex embedded project development with Xilinx Virtex FPGA eval board and Xilinx CAD tools using Verilog HDL and C programming language. Embedded development and introduction to ethernet, USB, SATA, VGA, DVI, PS2, RS232, GPIO, and soft processor cores.

Offered: Fall

ECE 406 GPU PARALLEL C/C++ PROGRAMMING
GPU micro-architecture, including global memory, constant memory, texture memory, SP, SM, scratchpad memory, L1 and L2 cache memory, multi-ported memory, register file, and task scheduler. Parallel programming applications to parallel sorting, reduction, numeric iterations, fundamental graphics operations such as ray tracing. Desktop GPU programming using Nvidia's CUDA (Compute-Unified Device Architecture). CPU/GPU cooperative scheduling of partially serial/partially parallel tasks. No midterms or written exams. Course consists of seven hands-on projects using CUDA.

ECE 407 Advanced GPU Project Development
Students develop an advanced project for the GPU platform. A GPU compute-cluster can be employed, as well as a single GPU computer. Students meet with the instructor twice a week to report the progress and the new direction is determined based on
the results and the ongoing progress. Project options include: Protein folding (BLAST algorithm), Face recognition (using OpenCV), 3D Image reconstruction of biomedical images, and other sophisticated image processing algorithms.

Offered: Spring

**ECE 409** MACHINE LEARNING
This course presents the mathematical foundations of AI, including probability, decision theory and machine learning.

Offered: Spring

**ECE 421** OPT PROPERTIES OF MATERIALS

**ECE 423** SEMICONDUCTOR DEVICES

Offered: Fall

**ECE 424** INTRO CONDENSED MATTER PHY
An emphasis on the wide variety of phenomena that form the basis for modern solid state devices. Topics include crystals; lattice vibrations; quantum mechanics of electrons in solids; energy band structure; semiconductors; superconductors; dielectrics; and magnets

Offered: Spring

**ECE 426** WAVEGUIDES AND DEVICES
See OPT 468

**ECE 427** Electric Power: Conversion, Transmission, and Consumption
We will describe how the principal sources of energy - coal, natural gas, impounded water (hydroelectric), and fissile materials - are exploited to create electric power, how it is transmitted and distributed through the grid and finally the patterns of its consumption. To assure that students gain a proper appreciation for the factors that determine the real cost of electricity per kilowatt-hour, the subject will be treated in a highly quantitative way. The goal will be to provide students with the information and tools they need for informed analysis of the true prospects and technological challenges involved in integration of new energy sources, such as solar, wind, geothermal, and tidal power, with the existing grid. There will be weekly homework and a midterm. Two projects with oral presentations, including a major one at the end of the semester, are required. There is no final exam. Several required field trips to local power facilities occur during the semester.

**ECE 428** RADIATION & DETECTORS
See OPT 425

**ECE 429** AUDIO ELECTRONICS
The devices, circuits, and techniques of audio electronics are covered in this course. Included is a survey of small signal amplifier designs and small-signal analysis and characterization, operational amplifiers and audio applications of opamps, large-signal design and analysis methods including an overview of linear and switching power amplifiers. The course also covers the design of vacuum tube circuits, nonlinearity and distortion. Other important audio devices are also covered including microphones, loudspeakers, analog to digital and digital to analog converters, and low-noise audio equipment design principles.

Offered: Spring

**ECE 431** COMPUTATIONAL METHODS
Computational Methods covers basic computational techniques for the numerical solution of these problems on computers. This process involves the conversion of physical problems into mathematical boundary-value problems, the approximation of continuous problems as discrete problems, and numerical inversion of systems of equations. Applications in acoustic and electromagnetic wave propagation and scattering will be presented as motivation. Students are encouraged to adapt the techniques to their own research interests and will be expected to develop basic computer programs implementing the discussed algorithms. Applications in acoustic and electromagnetic wave propagation and scattering will be presented as motivation for the
development of methods. Students are encouraged to adapt the techniques to their own research interests and will be expected to
develop basic computer programs implementing the discussed algorithms.
Offered: Spring

ECE 432 ACOUSTICAL WAVES
Acoustic wave equation; plane, spherical, and cylindrical wave propagation; reflection and transmission at boundaries; normal
modes; absorption and dispersion; radiation from points, spheres, cylinders, pistons, and arrays; diffraction; nonlinear acoustics.
Offered: Summer

ECE 433 MUSICAL ACOUSTICS
Aspects of acoustics. Review of oscillators, vibratory motion, the acoustic wave equation, reflection, transmission and absorption
of sound, radiation and diffraction of acoustic waves. Resonators, hearing and speech, architectural and environmental acoustics.
Offered: Fall

ECE 435 INTRODUCTION TO OPTOELECTRONICS
Introduction to fundamentals of wave propagation in materials, waveguides and fibers, generation, modulation and detection of
light using semiconductor devices, and elements of optocommunication systems.
Offered: Spring

ECE 436 Nanophotonic and Nanomechanical devices
Various types of typical nanophotonic structures and nanomechanical structures, fundamental optical and mechanical properties:
micro/nano-resonators, photonic crystals, plasmonic structures, metamaterials, nano-optomechanical structures. Cavity
nonlinearoptics, cavity quantum optics, and cavity optomechanics. Fundamental physics and applications, state-of-art devices and
current research trends. This class is designed primarily for graduate students. It may be suitable for senior undergraduates if they
have required basic knowledge.
Offered: Fall

ECE 440 INTRODUCTION TO RANDOM PROCESSES
The goal of ECE440 is to learn how to model, analyze and simulate stochastic systems, found at the core of a number of
disciplines in engineering, for example communication systems, stock options pricing and machine learning. ECE 440 is divided
into five thematic blocks: Introduction, Probability review, Markov chains, Continuous-time Markov chains, and Gaussian,
Markov and stationary random processes.
Offered: Fall

ECE 441 DETECTION & ESTIMATION THEORY
Loss and utility; Bayesian inference; risk functions, randomized decisions, admissible decisions; empirical Bayes for unknown
prior; Neyman-Pearson hypothesis testing, receiver operating characteristic; sufficient and minimal sufficient statistics and Rao-
Blackwellization; unbiased estimation; minimum variance unbiased estimation and Cramer-Rao inequality, maximum likelihood
estimation; nonparametric estimation of cdfs.
Offered: Spring

ECE 444 DIGITAL COMMUNICATIONS
Digital communication system elements, characterization and representation of communication signals and systems. Digital
transmission, binary and M-ary modulation schemes, demodulation and detection, coherent and incoherent demodulators, error
performance. Channel capacity, mutual information, simple discrete channels and the AWGN channel. Basics of channel coding
and error correction codes.
Offered: Fall

ECE 445 WIRELESS COMMUNICATIONS
This course teaches the underlying concepts behind traditional cellular radio and wireless data networks as well as design trade-
offs among RF bandwidth, transmitter and receiver power and cost, and system performance. Topics include channel modeling,
digital modulation, channel coding, network architectures, medium access control, routing, cellular networks, WiFi/IEEE 802.11
networks, mobile ad hoc networks, sensor networks and smart grids. Issues such as quality of service (QoS), energy conservation, reliability and mobility management are discussed. Students are required to complete a semester-long research project in order to obtain in-depth experience with a specific area of wireless communication and networking.

Offered: Spring

ECE 446 DIGITAL SIGNAL PROCESSING
Analysis and design of discrete-time signals and systems, including: difference equations, discrete-time filtering, z-transforms, A/D and D/A conversions, multi-rate signal processing, FIR and IIR filter design, the Discrete Fourier Transform (DFT), circular convolution, Fast Fourier Transform (FFT) algorithms, windowing, and classical spectral analysis.

Offered: Fall

ECE 447 DIGITAL IMAGE PROCESSING
This course will introduce the students to the basic concepts of digital image processing, and establish a good foundation for further study and research in this field. The theoretical components of this course will be presented at a level that seniors and first year graduate students who have taken introductory courses in vectors, matrices, probability, statistics, linear systems, and computer programming should be comfortable with. Topics cover in this course will include intensity transformation and spatial filtering, filtering in the frequency domain, image restoration, morphological image processing, image segmentation, image registration, and image compression. The course will also provide a brief introduction to python (ipython), the primary programming language that will be used for solving problems in class as well as take-home assignments.

Offered: Fall

ECE 448 WIRELESS SENSOR NETWORKS
This course will cover the latest research in the area of Wireless Sensor Networks. We will cover all aspects of these unique and important systems, from the hardware and radio architecture through protocols and software to applications. Topics will include sensor network architectures, hardware platforms, physical layer techniques, medium access control, routing, topology control, quality of service (QoS) management, localization, time synchronization, security, storage, and other advanced topics. Each student must complete a semester-long course project related to wireless sensor networks.

Offered: Spring

ECE 449 MACHINE VISION
Fundamentals of computer vision, including image formation, elements of human vision, low-level image processing, and pattern recognition techniques. Advanced topics include modern visual features, graphical models, model-based and data-driven approaches, and contextual inference, as well as examples of successes and challenges in applications. CSC 449, a graduate-level course, requires additional readings and assignments (including a course project).

Offered: Spring

ECE 450 INFORMATION THEORY
Entropy, Relative Entropy, mutual information, asymptotic equipartition property, data compression, channel capacity, joint source channel coding theorem, Gaussian channels, rate distortion theory, selected applications.

ECE 451 BIOMEDICAL ULTRASOUND
SEE BME 253
Offered: Spring

ECE 452 MEDICAL IMAGING-THEORY & IMPLEMENTATION
Physics and implementation of X-ray, ultrasonic, and MR imaging systems. Fourier transform relations and reconstruction algorithms of X-ray and ultrasonic-computed tomography, and MRI.

Offered: Fall

ECE 453 Ultrasound Imaging
Introduction to the principles and implementation of diagnostic ultrasound imaging. Topics include linear wave propagation and reflection, fields from pistons and arrays, beamforming, B-mode image formation, Doppler, and elastography. Project and final report
Offered: Spring

ECE 455 SOFT ANALY & IMPROV
Programming is the automation of information processing. Program analysis and transformation is the automation of programming itself—how much a program can understand and improve other programs. Because of the diversity and complexity of computer hardware, programmers increasingly depend on automation in compilers and other tools to deliver efficient and reliable software. This course combines fundamental principles and (hands-on) practical applications. Specific topics include data flow and dependence theories; static and dynamic program transformation including parallelization; memory and cache management; type checking and program verification; and performance analysis and modeling. The knowledge and practice will help students to become experts in software performance and correctness. Students taking the graduate level will have additional course requirements and a more difficult project.
Offered: Spring

ECE 457 Digital Video Processing
Basics of digital video, digital video filtering, and video-based object recognition and tracking. Core topics to include: algorithms for 2-D motion estimation, compression, video segmentation, image enhancement, transform and sub-band/wavelet coding, compression, feature extraction from video, and 3-D video processing. Projects will apply video-based techniques for solving a wide variety of problems in areas such as person and object tracking, human motion analysis, biometrics, and scene understanding.
Offered: Spring

ECE 461 INTRODUCTION TO VLSI
Introduction to high performance integrated circuit design. Semiconductor technologies. CMOS inverter. General background on CMOS circuits, ranging from the inverter to more complex logical and sequential circuits. The focus is to provide background and insight into some of the most active high performance related issues in the field of high performance integrated circuit design methodologies, such as CMOS delay and modeling, timing and signal delay analysis, low power CMOS design and analysis, optimal transistor sizing and buffer tapering, pipelining and register allocation, synchronization and clock distribution, retiming, interconnect delay, dynamic CMOS design techniques, power delivery, on-chip regulators, 3-D technology and circuit design, asynchronous vs. synchronous tradeoffs, clock distribution networks, low power design, and CMOS power dissipation.
Offered: Fall

ECE 462 ADVANCED CMOS VLSI DESIGN
Senior design course for "Computer Design" or "Integrated Electronics" concentrations. Review of CMOS Subsystem design. Design focus on digital or mixed-signal systems, such as a simple microprocessor, a self-timed multiplier, a digital filter, data converter, or memory. Project design requirements include architectural design, logic and timing verification, layout design, and test pattern generation. Extensive use of CAD tools. The resulting VLSI chips may be fabricated.
Offered: Spring

ECE 463 VLSI ERROR CONTROL SYSTEMS
This course reviews the reliability challenges introduced by the multi-core billion-transistor integration era, and discusses circuit, architectural, and algorithmic level solutions to address these challenges. After a brief review of IC design and layout concepts, students are introduced to the tradeoffs in continued CMOS scaling. Lectures, assigned readings, discussions, student presentations, review reports of the research literature, computer simulations and modeling, design projects of varying complexity.
Offered: Spring

ECE 466 RF AND MICROWAVE INTEGRATED CIRCUITS
This course involves the analysis and design of radio-frequency (RF) and microwave integrated circuits at the transistor level. We begin with a review of electromagnetics and transmission line theory. Several design concepts and techniques are then introduced, including Smith chart, s-parameters, and EM simulation. After the discussion of RLC circuits, high-frequency
narrow-band amplifiers are studied, followed by broadband amplifiers. Then we examine the important issue of noise with the design example of low-noise amplifiers (LNA). Nonlinear circuits are studied next with the examples of mixers. A study of oscillators and phase noise follows. Afterwards we introduce phase-locked loops (PLL) and frequency synthesizers. The course concludes with an overview of transceivers architectures. The course emphasizes the development of both circuit design intuition and analytical skills. There are bi-weekly design labs and a term project using industry-standard EDA tools (ADS, Asitic, etc.).

Offered: Spring

ECE 467 ANALOG INTEGRATED CIRCUIT
MOSFET and bipolar device structures and models. Analysis and design of analog CMOS integrated circuits. Modern opamp design with noise, offset and distortion analysis, feedback, frequency compensation, and stability. Current mirrors and bandgap references. Sampling devices and structures. More advanced design projects and use of design aids and CAD tools (including simulation and synthesis) are included.

ECE 468 ADVANCED ANALOG CMOS CIRCUITS AND SYSTEMS

Offered: Spring

ECE 469 HIGH SPEED INTEGRATED ELECTRONICS
We begin with an overview of high speed semiconductor technologies (CMOS, SiGe, SOI, GaAs, InP, etc) and devices (MOSFET, MESFET, HEMT, HBT, and tunneling diodes), followed by discussion of device characterization and technology optimization for circuit performance. We focus on the design of wideband and high power amplifiers, which includes discussions on feedback, impedance matching, distributed amplifiers, power combining, and switching power amplifiers. The third part of the course involves the design of high speed phase locked and delay-locked loops (PLL and DLL). After a review of PLL basics, we discuss its building blocks: VCO, frequency divider, phase detector, and loop filter. We also analyze its performance, in particular phase noise, jitter, and dynamic performance, and how to improve them. Two important applications, frequency synthesis and clock recovery, serve as the examples in our discussion. Each part of the course also includes related simulation methods and measurement techniques.

ECE 471 COMP MODELS OF MUSIC Processes
Fundamentals of computational music including selected topics in modern music theory and music representation, encoding of music information by computers, musical sound representation and compression, automated music transcription, human-computer music interfaces and music informatics.

Offered: Spring

ECE 472 AUDIO SIGNAL PROCESSING
This course is a survey of audio digital signal processing fundamentals and applications. Topics include sampling and quantization, analog to digital converters, time and frequency domains, spectral analysis, vocoding, digital filters, audio effects, music audio analysis and synthesis, and other advanced topics in audio signal processing. Implementation of algorithms using Matlab and on dedicated DSP platforms is emphasized.

Offered: Spring

ECE 473 Computational Models of Music
We will explore various computational approaches to musical problems (rule-based approaches, connectionism, dynamic systems, and probabilistic models), focusing on two main areas: 1) models of musical processing and information retrieval; 2) models of musical styles. Our focus will be on the symbolic level of music representation rather than on the signal level (there will be no signal processing in this course). Most assignments will consist of reading articles and answering questions about them. There will be some programming assignments, with other options for students without programming ability.

Offered: Spring
ECE 474 BIOMED SENSORS, CIRCUITS & INTR
Circuits and sensors used to measure physiological systems at an advanced level. Measurement of strain, pressure, flow, temperature, biopotentials, and physical circuit construction.

ECE 475 AUDIO SOFTWARE DESIGN
This course aims to give students the ability to develop their own audio/music programs in C and a few major open-source audio programming languages. It begins with an introduction to computer music and audio programming, and a comparative survey of audio programming languages. After an overview of the C language, we then explore the topics of programming for sound synthesis. The second half of this course introduces the primary techniques of sound design using the audio programming environments of Pure Data and Csound. Students will practice their programming techniques through a series of programming assignments and a final project.
Offered: Fall

ECE 476 AUDIO SOFTWARE DESIGN II
This course is a sequel to AME262/ECE475 Audio Software Design I. The first part of the course will explore designing audio effect plug-ins with Faust and C++. Students will learn how to design plug-ins for Pro Tools, Logic and other digital audio workstations (DAWs). The second part of the course will focus on audio programming for iOS apps with Objective-C and Swift. Students will learn how to make musical apps, including a guitar tuner app. A special topic will introduce audio programming for video games.
Offered: Spring

ECE 477 COMPUTER AUDITION
Computer audition is the study of how to design a computational system that can analyze and process auditory scenes. Problems in this field include source separation (splitting audio mixtures into individual source tracks), pitch estimation (estimating the pitches played by each instrument), streaming (finding which sounds belong to a single event/source), source localization (finding where the sound comes from) and source identification (labeling a sound source).
Offered: Fall

ECE 479 Audio Recording - Technology and Fundamentals
This course covers the acoustical and psychoacoustic fundamentals of audio recording including the nature of sound, sound pressure level, frequency and pitch, hearing and sound perception, reflection, absorption and diffusion of sound, sound diffraction, room acoustics, reverberation, and studio design principles. The course also provides practical experience in audio recording including an introduction to recording studio equipment, microphones and microphone placement techniques, signal flow, amplification, analog and digital recording, analog to digital conversion, digital processing of sound, multi-track recording and an introduction to mixing and mastering. Each student is required to complete a substantive recording project at the end of the course.
Offered: Fall Spring

ECE 480 CONVEX OPTIMIZATION
This course will provide students with the tools and training to recognize convex optimization problems that arise in engineering. It will introduce basic convex optimization models (linear programming, second-order cone programming and semi-definite programming), duality theory, modern algorithms for non-smooth optimization, as well as interior point methods and robust optimization techniques. All concepts and theories will be illustrated with numerous applications from signal processing, statistical learning for data analytics, digital communication (e.g., wireless communication system design), control, circuit design, and computational geometry.
Offered: Fall

ECE 491 MASTER’S READING COURSE ECE

ECE 492 Special Topics: VLSI Arithmetic for Systems-on-Chip (SoCs)
This course shows how to transform basic arithmetic operations into their equivalent hardware architectures and circuits, and their efficient hardware implementation, verification, and testing. These building blocks are then optimized for various target
metrics, such as real-time response, power, energy, throughput, latency, ease of implementation, etc. for modern SoCs, hybrid SoCs, and networks-on-chip (NoCs).

Offered: Spring

ECE 493 MASTER'S ESSAY

ECE 494 RESEARCH INTERNSHIP

ECE 495 MASTER'S RESEARCH IN ECE

ECE 495A MASTERS RESEARCH IN ABSENTIA

ECE 496 SPECIAL PROJECTS IN ECE

ECE 520 SPIN BASED ELECTRONICS

Up until now CMOS scaling has given us a remarkable ride with little concern for fundamental limits. It has scaled multiple generations in feature size and in speed while keeping the same power densities. However, CMOS finally encounters fundamental limits. The course is intended for students interested in research frontiers of future electronics technologies. The course begins with introduction to the basic physics of magnetism and of quantum mechanical spin. Then it covers aspects of spin transport with emphasis on spin-diffusion in semiconductors. The second part of the course is comprised of student and lecturer presentations of selected spintronics topics which may include: spin transistors, magnetic random access memories, spin-based logic paradigms, spin-based lasers and light emitting diodes, magnetic semiconductors, spin-torque devices for memory applications and the spin Hall effect.

Offered: Spring

ECE 565 PERF ISSUES VLS/IC

Primary and recent research in the fields of high performance digital and analog VLSI design and analysis. Provides background and insight into some of the more active performance related research topics of the field such as CMOS design techniques, speed/area/power tradeoffs in CMOS circuits, low power design, RLC interconnect, synchronization and clock distribution, pipelining/retiming, and many other areas.

Offered: Spring

ECE 591 PHD READING COURSE IN ECE

ECE 592 ACOUSTIC IMAGING II

ECE 594 PHD RESEARCH INTERNSHIP

ECE 594P PHD RESEARCH INTERNSHIP PT

ECE 595 PHD RESEARCH IN ECE

ECE 595A PHD RESEARCH IN ABSENTIA

ECE 597 ECE COLLOQUIUM

ECE 890 SUMMER IN RESIDENCE - MA

ECE 895 CONT OF MASTER'S ENROLLMENT

ECE 897 MASTER'S DISSERTATION

ECE 897A MASTER'S DISS IN ABSENTIA
ECE 899 MASTER'S DISSERTATION
ECE 899A MASTER'S DISSERTATION
ECE 899B MASTER'S IN-ABSENTIA ABROAD
ECE 985 LEAVE OF ABSENCE
ECE 986V FULL-TIME VISITING STUDENT
ECE 987V PART TIME VISITING STUDENT
ECE 990 SUMMER IN RESIDENCE
ECE 995 CONT OF DOCTORAL ENROLLMENT
ECE 997 DOCTORAL DISSERTATION
ECE 997A DOCT DISSERTATION IN ABSENTIA
ECE 999 DOCTORAL DISSERTATION
ECE 999A DOCT DISSERTATION IN ABSENTIA

ECO 108 PRINCIPLES OF ECONOMICS
The fundamentals of microeconomic and macroeconomic theory, with applications; preparation for subsequent economics courses.

ECO 207 INTERMEDIATE MICROECONOMICS
The economics of consumer choice and the demand for goods; producer choice, including the supply of goods and the demand for labor and other inputs; the effects of competition and monopoly power on prices and production.

ECO 207H INTERMEDIATE MICROECONOMICS-HONORS
This course shows how the choices of consumers and firms interact through markets to determine all the factors related to economic well being. In comparison to other sections of ECO 207, this section develops these choices more formally and mathematically.

ECO 208W TOPICS IN MICROECONOMIC THEORY
This course is a sequel to ECO 207. It covers a variety of topics in microeconomics. The precise content varies, but usually includes a more detailed look at alternative normative criteria, applied game theory, auction theory, the problem of social cost, and a little voting theory.
Offered: Spring

ECO 209 INTERMEDIATE MACROECONOMICS
National income accounting concepts; their changes and fluctuations as explained by theories of income determination.
Offered: Fall Spring

ECO 209H INTERMEDIATE MACROECONOMICS-HONORS
National income accounting concepts, their changes and fluctuations as explained by theories of income determination. In comparison to other sections of ECO 209, this section develops those concepts more formally and mathematically.

ECO 211 MONEY, CREDIT & BANKING
A well working monetary system is crucial to the high functioning of an economy. If the monetary system breaks down, commercial society is turned upside down. The better we know what money is and how it can affect economic activity, the greater will be our ability to avoid future monetary crises. This course breaks down the principles of money, banking and financial markets into three areas. First is an institutional and historical analysis of the development of money and financial institutions. Second will be a theoretical introduction to the money market using the standard economic framework of supply and demand. We will study whether (and if so, how) disruptions in the money market can have an effect on prices, but also on the real economy, including the level of economic activity and interest rates. The final part will address the tools of monetary policy, including an introduction to the international financial system, and ideas for how to reform existing banking and currency regimes, time permitting.

Offered: Spring

**ECO 211W MONEY, CREDIT & BANKING**
The institutions that generate the money supply. The influence of monetary and fiscal policy on economic stability and growth.

**ECO 214 ECON THEORY OF ORGANIZATIONS**

**ECO 214W ECON THEORY OF ORGANIZATIONS**

**ECO 217 Contract Theory**
This course examines how markets can engineer trades that maintain incentives in the face of transactions costs and information problems—problems of moral hazard and adverse selection. Emphasis will be placed on applications to insurance and employment markets, but with extensions to firm pricing, corporate finance, and public policies.

Offered: Fall

**ECO 217W Contract Theory**
This course examines how markets can engineer trades that maintain incentives in the face of transactions costs and information problems—problems of moral hazard and adverse selection. Emphasis will be placed on applications to insurance and employment markets, but with extensions to firm pricing, corporate finance, and public policies.

Offered: Fall

**ECO 220W FAIR ALLOCATION**
The course is an introduction to the mathematical modeling of problems of fairness in resource allocation. Among the types of problems we will seek to analyze are: - How should the Red Cross distribute supplies among refugees in a refugee camp. - How should housemates split the rent when the rooms in the house they share have different features that each housemate values differently. - How should students in a dance class be organized in male-female pairs when each male student has preferences over female partners and each female student has preferences over male partners? - When a firm goes bankrupt, how should it liquidation value be divided among its creditors?

Offered: Spring

**ECO 224 SPORTS AND ECONOMICS**
The markets for professional and amateur sports and entertainment are analyzed. Impacts of market organization and public policy on attendance, salaries, and profits are examined.

**ECO 224W SPORTS AND ECONOMICS**
The markets for professional and amateur sports and entertainment are analyzed. Impacts of market organization and public policy on attendance, salaries, and profits are examined.

**ECO 230 ECONOMIC STATISTICS**
This course is an introduction to the probability and statistical theory underlying the estimation of parameters and testing of hypotheses in economics. Linear correlation and simple regression analysis are also introduced. Students will use computers to analyze economic data.

**ECO 231W ECONOMETRICS**
The course is an introduction to the application of econometric methods. It covers the basic tools of estimation, inference and forecast of cross-section, time-series and panel data models.

Offered: Fall Spring

ECO 233W APPLIED ECONOMETRICS
The course is an introduction to the application of econometric methods. It covers the basic tools of estimation, inference and forecast of cross-section, time-series and panel data models. The course emphasizes the intuitive understanding and practical application of these basic tools of econometric analysis.

ECO 236 HEALTH ECONOMICS
Analysis of factors that affect supply and demand in the market for medical care: risk, insurance, externalities, ethics, regulation.

ECO 236W HEALTH ECONOMICS
Analysis of factors that affect supply and demand in the market for medical care: risk, insurance, externalities, ethics, regulation.

ECO 238 ENVIRONMENTAL ECONOMICS
The course will demonstrate that environmental problems are economic problems and examine the past, present and future visions of resource use, production and sustainability.

ECO 238W ENVIRONMENTAL ECONOMICS
The course will demonstrate that environmental problems are economic problems and examine the past, present and future visions of resource use, production and sustainability.

ECO 241 PRICING STRATEGY

ECO 251 INDUSTRIAL ORGANIZATION
This course examines the determinants of market structure and market performance. Questions discussed are pricing, product and quality choice, collusion, mergers, vertical restrictions, antitrust policy and related welfare analysis. Additional topics (depending on time) that are covered are networks, auctions, advertisement, and research and development. The course puts a special emphasis on studying strategic situations and using the tools of game theory. We use examples from US and international markets to illustrate the main theoretical ideas.

Offered: Spring

ECO 251W INDUSTRIAL ORGANIZATION
This course examines the determinants of market structure and market performance. Questions discussed are pricing, product and quality choice, collusion, mergers, vertical restrictions, antitrust policy and related welfare analysis. Additional topics (depending on time) that are covered are networks, auctions, advertisement, and research and development. The course puts a special emphasis on studying strategic situations and using the tools of game theory. We use examples from US and international markets to illustrate the main theoretical ideas.

ECO 252 ECONOMIES & SOCITIES OF LATIN AMERICA
Provides historical explanation for the general problem of material poverty and the sociopolitical crises that characterize contemporary Latin America and the Caribbean. Same as AAS 252 and HIS 203.

ECO 253W Economics of Discrimination
Economic development of African Americans during the twentieth century, with an examination of the economics of discrimination. Same as HIS 253 and AAS 253.

ECO 255 NIGERIA SINCE ISLAM REV 1804
This course is taught in the context of the world economic order, its evolution from the sixteenth century and the location of different parts of the world within it. The course focuses on the historical development of socioeconomic and political structures over time to explain why the giant of Africa has continued to slumber. Same as HIS 272 and AAS 260.

**ECO 257 CORRUPTION GLOBAL ECONOMY**

**ECO 263 PUBLIC FINANCE**

This course is intended to be an introduction to the study of the role of government in the economy, with an emphasis on the microeconomic aspects of this role. Both the taxation and the expenditure sides of government activity will be studied. The first part of the course will be devoted to the theory of public finance in order to build a foundation for the remainder of the course, which involved the application of this theory to particular programs and institutions (policy analysis). Typical topic include: public goods, social security, income taxation, tax reform, fiscal federalism, etc.

**ECO 263W PUBLIC FINANCE**

This course is intended to be an introduction to the study of the role of government in the economy, with an emphasis on the microeconomic aspects of this role. Both the taxation and the expenditure sides of government activity will be studied. The first part of the course will be devoted to the theory of public finance in order to build a foundation for the remainder of the course, which involved the application of this theory to particular programs and institutions (policy analysis). Typical topic include: public goods, social security, income taxation, tax reform, fiscal federalism, etc.

**ECO 267 Competitive Markets in a Globalized World**

Significant increases in international trade in parts and components have resulted in a large re-arrangement of comparative advantage leading to significant degrees of off-shoring, out-sourcing, and greater gains from international trade. Such changes also increase concerns in some advanced countries that local labor will be adversely affected by falls in wage rates (or unemployment). The formal arguments for and against such views will be carefully examined with the basic set of competitive trade models. Basic reading is found in R. Jones, Globalization and the Theory of Input Trade, MIT press, and the accompanying references.

**ECO 267W Competitive Markets in a Globalized World**

Significant increases in international trade in parts and components have resulted in a large re-arrangement of comparative advantage leading to significant degrees of off-shoring, out-sourcing, and greater gains from international trade. Such changes also increase concerns in some advanced countries that local labor will be adversely affected by falls in wage rates (or unemployment). The formal arguments for and against such views will be carefully examined with the basic set of competitive trade models. Basic reading is found in R. Jones, Globalization and the Theory of Input Trade, MIT press, and the accompanying references.

**ECO 268 ECONOMICS OF GLOBALIZATION**

This course studies the economics of world integration. We will explore the arguments for and against opening an economy to international trade in goods and financial capital. We will specifically focus on the implications of openness for welfare, growth, volatility, and inequality. The course will include economic theory as well as several applications. Applications include the growth miracles of East Asia, India’s recent transformation, emerging market crises of the 1900s, aid and development in Africa, and the impact of trade on wages in the United States.

**ECO 268W ECONOMICS OF GLOBALIZATION**

This course studies the economics of world integration. We will explore the arguments for and against opening an economy to international trade in goods and financial capital. We will specifically focus on the implications of openness for welfare, growth, volatility, and inequality. The course will include economic theory as well as several applications. Applications include the growth miracles of East Asia, India’s recent transformation, emerging market crises of the 1900s, aid and development in Africa, and the impact of trade on wages in the United States.

**ECO 269 INTERNATIONAL TRADE**

Trade patterns and comparative advantage; commercial policy and the distribution of gains from trade; balance of payments problems.
ECO 269W INTERNATIONAL TRADE
Trade patterns and comparative advantage; commercial policy and the distribution of gains from trade; balance of payments problems.

ECO 270 INTERNATIONAL Economics
This course introduces students to the most recent work in international trade: the behavior of individual firms in international markets. We will try to understand the determinants of exporting behavior for heterogenous firms, how individual decision shape aggregate trade patterns and how they react to trade policy differently. We will explore the impacts of globalization and government policy. We will also introduce students to the new empirical work on outsourcing, FDI and multinationals, exchange rate and national account.

ECO 270W International Economics
This course introduces students to the most recent work in international trade: the behavior of individual firms in international markets. We will try to understand the determinants of exporting behavior for heterogenous firms, how individual decision shape aggregate trade patterns and how they react to trade policy differently. We will explore the impacts of globalization and government policy. We will also introduce students to the new empirical work on outsourcing, FDI and multinationals, exchange rate and national account.

ECO 271 BEHAVIORAL ECONOMICS
Incorporates insights from psychology into the standard economic model of consumer choice; asks if institutions can be designed to help people make better decisions.
Offered: Spring

ECO 271W BEHAVIORAL ECONOMICS
Incorporates insights from psychology into the standard economic model of consumer choice; asks if institutions can be designed to help people make better decisions.

ECO 281 STATE ROLE GLOBAL PERSP

ECO 288 GAME THEORY
Game theory is a systematic study of strategic situations. It is a theory that helps us analyze economic and political strategic issues, such as behavior of individuals in a group, competition among firms in a market, platform choices of political candidates, and so on. We will develop the basic concepts and results of game theory, including simultaneous and sequential move games, repeated games and games with incomplete information. The objective of the course is to enable the student to analyze strategic situations on his or her own. The emphasis of the course is on theoretical aspects of strategic behavior, so familiarity with mathematical formalism is required.
Offered: Fall Spring

ECO 288W GAME THEORY
Game theory is a systematic study of strategic situations. It is a theory that helps us analyze economic and political strategic issues, such as behavior of individuals in a group, competition among firms in a market, platform choices of political candidates, and so on. We will develop the basic concepts and results of game theory, including simultaneous and sequential move games, repeated games and games with incomplete information. The objective of the course is to enable the student to analyze strategic situations on his or her own. The emphasis of the course is on theoretical aspects of strategic behavior, so familiarity with mathematical formalism is required.
Offered: Fall Spring

ECO 389W SENIOR SEMINAR
Independent research on an economic problem chosen by the student and approved by a member of the faculty who agrees to supervise the research. Each student must write a substantial paper that reports on the outcome of that research. Class presentation on the progress of this research are also required. Senior status and instructor permission required.

ECO 390 SUPERVISED TEACHING
Responsibility for one recitation section and/or for holding office hours under the instructor’s supervision. Departmental approval required.

**ECO 391 INDEPENDENT STUDY**

Designed for advanced students seeking to do research beyond what is contained in the regular course offerings. Requires faculty supervisor in the economics department.

**ECO 391W INDEPENDENT STUDY**

**ECO 393 SENIOR PROJECT**

**ECO 394 INTERNSHIP**

Not for concentration credit. Requires faculty supervisor in the economics department.

**ECO 394W INTERNSHIP**

**ECO 396 TEACHING ASSISTANTS**

**ECO 471 MODERN VALUE THEORY I**

The foundation of modern microeconomic analysis, including consideration of consumer behavior, the theory of the firm, equilibrium under alternative market structures, and welfare implications.

**ECO 472 MODERN VALUE THEORY**

Introduction to non-cooperative game theory, asymmetric information models, and social choice theory

**ECO 475 MACROECONOMICS**

Reviews the main empirical regularities that characterize economic growth and business fluctuations in market economies. Discusses various theoretical models of the business cycle, as well as the macroeconomic impact of fiscal and monetary policy.

**ECO 476 MACROECONOMICS II**

This course continues on with the theme developed in 475: understanding modern macroeconomics based on dynamic optimization in a general equilibrium environment. The emphasis is placed on understanding business cycles, economic growth, fiscal and monetary policies.

Offered: Spring

**ECO 481 INTRODUCTION TO MATH ECONOMICS**

This course covers the use of optimization theory in economic analysis. The topics covered include finite-dimensional optimization (unconstrained optimization, Lagrange's Theorem, the Kuhn-Tucker Theorem), the role of convexity in optimization, parametric continuity of solutions to optimization problems, and finite- and infinite-horizon dynamic programming.

**ECO 482 MATH ECONOMICS**

**ECO 483 INTRODUCTION TO MATH STATISTICS**

Elements of probability theory and statistics, as employed in the econometrics sequence ECO. Two credit hour class.

**ECO 484 INTRODUCTION TO ECONOMETRICS**

Estimation and hypothesis testing in the standard linear model. Linear restrictions; dummy variables; multicollinearity; weighted least squares; specification error. Two credit hour class. (Same as APS 514)

**ECO 491** MASTER'S READINGS IN ECON

**ECO 492** MATH ECONOMICS

**ECO 493** MASTER'S ESSAY

**ECO 495** MASTER'S RESEARCH IN ECON

**ECO 501** SEMINAR LABOR ECONOMICS
Selected topics in labor economics are discussed. The topics vary from year to year. In recent years, topics have included human capital, models of wage growth, inequality, and labor policy.

**ECO 502** TOPIC IN LABOR ECONOMICS
Selected topics in labor economics are discussed. The topics vary from year to year. In recent years, topics have included human capital models of wage growth, wage inequality, and labor policy.

**ECO 503** TOPICS IN LABOR ECONOMICS
The course is a mix between methods and topics. The first half of the course focuses on estimating dynamic discrete choice (DDC) models, a common tool used in structural labor, education, and industrial organization. The second half of the course then examines topics related to the development of human capital, often through the lens of DDC models. The topics typically include human capital related issues in K-12 education, higher education, early childhood investments, and understanding the returns to human capital in the labor market.

**ECO 507** ECONOMIC THEORY WORKSHOP

**ECO 508** ECONOMIC THEORY WORKSHOP

**ECO 509** INTERNATIONAL TRADE
Theory of specialization according to comparative advantage. Effects of tariffs on the gains from trade and the distribution of income. Standard and new trade theories.

**ECO 510** International Economics
Topics in exchange rates, the balance of payments, asset-pricing and international capital flows, macroeconomics of open economies, and monetary systems.

**ECO 511** INTERNATIONAL WORKSHOP

**ECO 512** INTERNATIONAL WORKSHOP

**ECO 519** TOPICS IN MICROECONOMETRICS
Course content varies from year to year. Panel data, cross-section time series, qualitative dependent variables and duration analysis are possible topics discussed.

**ECO 520** TOP IN MACROECONOMETRICS
The course is an introduction to the econometric analysis of time series. ARMA models and nonlinear models for conditional mean dynamics, models for volatility, spectral analysis, linear regression, VAR, unit root processes and co-integration are possible topics discussed.

**ECO 521** ADVANCED ECONOMIC THEORY
ECO 522 TOPICS IN DECISION THEORY
This course studies choice theory with particular emphasis on choice under risk, the distinction between risk and uncertainty, and behavior in dynamic settings. The approach is largely formal and axiomatic, though applications are also considered.

ECO 523 CONT. TOP. IN ECONOMETRICS

ECO 524 TOPICS IN GAME THEORY

ECO 525 ECONOMIC MECHANISM
Existence and construction of mechanisms with desirable properties, elicitation schemes, implementation of social choice, planning procedures, matching procedures, fair mechanisms, manipulation of mechanisms.

ECO 526 SEMINAR IN GAME THEORY
Topics in dynamic games

ECO 529 MACRO-LABOR
This course covers topics of current research interest in macroeconomics and labor market dynamics.

ECO 531 MACROECONOMIC WORKSHOP

ECO 532 MONETARY WORKSHOP

ECO 534 TOPICS IN MACROECONOMICS
This is a doctoral level course in macroeconomics. Topics covered in the course are aggregate implications of financial imperfections. We will review recent papers on the implications of financial imperfections on business cycles, asset prices, government policies, firms and open economy issues.
Offered: Fall

ECO 535 QUANTITATIVE MACROECONOMICS
The focus of this course is on studying macroeconomic models with many types of households and firms. Models of capital, labor, financial, and marriage markets are presented. Issues such as adoption of new technologies, the determination of asset prices, marriage and divorce, and unemployment are studied. The development of the mathematical and computational skills required to do state-of-the-research in macroeconomics is stressed.

ECO 536 APPLIED MACROECONOMICS
The course considers theories of aggregate fluctuations and unemployment in light of a broad set of empirical regularities.
Offered: Fall

ECO 547 ECONOMETRICS WORKSHOP

ECO 548 ECONOMETRICS WORKSHOP

ECO 551 APPLIED ECONOMICS WORKSHOP

ECO 552 APPLIED Economics WORKSHOP

ECO 571 READINGS IN MACROECONOMICS
Faculty and Students will go through a series of recent working papers in macroeconomics with emphasis on quantitative and empirical topics.
ECO 575 POLITICAL ECONOMY I
This course will focus on several foundational topics in theoretical political economy. Within the paradigm of social choice theory, we cover Arrow's impossibility theorem, the limitations of rational collective decisionmaking, and the consequences for political stability vs. instability. We then take the perspective of noncooperative game theory and cover (among other things) the theory of implementation, strategic voting and the design of nonmanipulable voting rules, and the power of agenda setters.

ECO 582 POLITICAL ECONOMY II
The course develops and uses theoretical models with economic and political elements. A range of issues are studied with specific applications varying from year to year.

ECO 591 PHD READINGS IN ECONOMICS

ECO 594 RESEARCH INTERNSHIP

ECO 595 PHD RESEARCH IN ECONOMICS

ECO 595A PHD RESEARCH IN ABSENTIA

ECO 895 CONT OF MASTER'S ENROLLMENT

ECO 897 MASTER'S DISSERTATION

ECO 899 MASTER'S DISSERTATION

ECO 985 LEAVE OF ABSENCE

ECO 986V FULL TIME VISITING STUDENT

ECO 990 SUMMER IN RESIDENCE

ECO 995 CONT OF DOCTORAL ENROLLMENT

ECO 997 DOCTORIAL DISSERTATION

ECO 997A DOCT DISSERTATN IN ABSENTIA

ECO 999 DOCTORAL DISSERTATION

ECO 999A DOCT DISSERTATN IN ABSENTIA

ECO 999B PHD IN-ABSENTIA ABROAD

EES 101 INTRODUCTION TO GEOLOGICAL SCIENCES
This introductory geology class provides a broad overview of the earth sciences, from planetary evolution to the interplay of geology and climate. The course is a prerequisite for all undergraduate majors who are considering careers in the earth and environmental sciences, while also satisfying science requirements for other undergraduate majors. We will introduce the class with the unifying framework for Earth Science: plate tectonics. Throughout the semester we will look at the physical interactions between different realms on Earth, including the interior (core and mantle), the outer shell (termed lithosphere), oceans and atmosphere. We will explore the dynamic processes operating on Earth and how these processes have been recorded and have varied over the geologic history. During the last third of the semester, we will discuss geologic problems that have a particular relevance to humans, such as energy and mineral resources, water resources, climate and global change.
Offered: Fall

EES 102Q EARTHQUAKES, VOLCANOES AND MOUNTAIN RANGES: A FIELD QUEST
Understanding how the Earth works starts with an appreciation of geological processes in action. To observe these dynamic processes such as earthquakes, volcanic eruptions and mountain formation, Earth scientists must travel to areas of geological youth, such as California. In this Quest, students are introduced to active geology through readings and discussion sections in preparation for a field excursion to California. Students will learn how to examine critically ideas on how Earth science systems work and how active processes affect society.

Offered: Spring

**EES 103 INTRODUCTION TO ENVIRONMENTAL SCIENCE**

Introduction to environmental science topics through case studies of two local issues. Lake Ontario investigation will include topics of hydrology, ecology, air and water pollution, and domestic and international governance. Study of the Marcellus Shale will address energy consumption and production, risk assessment and public health, economics, and policy. Course concludes with critical analysis of technological "solutions" such as ethanol and nuclear power.

Offered: Spring

**EES 105 INTRODUCTION TO CLIMATE CHANGE**

This course will explore the Earth's dynamic climate system through lectures, discussions and computer-based modeling of climate processes. The course is designed to be accessible to all students. We will work toward an understanding of several fundamental and important questions. What are the main factors that determine the Earth's climate? What forces can drive climate to change? What can we learn from climate change in the Earth's distant past, when our planet experienced periods of both extreme cold and warmth? How do we know that our climate is now changing? What can we expect from the Earth's climate in the near future and how would it affect us?

Offered: Spring

**EES 119 ENERGY AND SOCIETY**

National and worldwide patterns of production and consumption of renewable and non-renewable energy sources and the connection of those patterns to socioeconomic conditions. For each resource, we consider the environmental effects of extraction, distribution, and consumption; how efficiently the resource is used and for what end uses; current reserves and projections for the future; socioeconomic and political factors affecting the resource's utilization. The course addresses interactions between energy use and climate change, food and water resources. NOTE: Juniors and Seniors in the natural sciences and engineering are required to enroll in EES 219.

Offered: Fall Spring

**EES 201 EVOLUTION OF THE EARTH**

Historical geology encompasses the (1) dynamic history of the physical earth: the development of land forms, rise and fall of ancient seas, movements of continents, etc., and (2) the evolution of historical geology such as paleontology, sedimentology, stratigraphy, geochronology, and plate tectonics, and a chronological survey of earth and life history, emphasizing the evolution of North America.

Offered: Spring

**EES 201W EVOLUTION OF THE EARTH-THIS COURSE IS NO LONGER OFFERED AS A "W" SECTION**

See EES 201 and EES Departmental Writing Plan. This section fulfills the upper level writing requirement This course is no longer offered as a writing requirement section.

Offered: Spring

**EES 202Q PLATE TECTONICS AND ACTIVE GEOLOGIC PROCESSES IN CALIFORNIA**

Understanding how the Earth works with an appreciation of geological processes in action. To observe these dynamic processes such as earthquakes, volcanic eruptions and mountain formation, Earth scientists must travel to areas of geological youth, such as California. In this course, students are introduced to active geology through readings and discussion sections in preparation for a field excursion to California. Students will learn to examine critically ideas on how Earth science systems work and how active processes affect society. This course is the complement to EES 102Q, and is intended for geology and environmental science majors.

Offered: Spring
EES 203 SEDIMENTOLOGY & STRATIGRAPHY
Sediments and sedimentary rocks cover or underlie much of the Earth’s surface. In them are recorded both evidence of the processes responsible for shaping the planetary surface and the record of life. Sedimentary rocks contain enormous volumes of water; solid and fluid hydrocarbons, as well as other natural resources. Sediments and sedimentary rocks are very important to our way of life, and they are fascinating in and of themselves. This course describes and classifies sedimentary rocks towards understanding the processes that shape them and the environments in which they form.
Offered: Spring

EES 203W SEDIMENTOLOGY & STRATIGRAPHY

EES 204 MINERALOGY-THIS COURSE IS NO LONGER OFFERED
The goal of this course is to provide an overview of the chemical and physical properties of the material constituents of the Earth and terrestrial planets, including minerals, rocks and lavas. The class will explore the relationship between the atomic structure and the properties of naturally-occurring solids, and the basic principles that govern the composition and occurrence of these materials. Laboratories are devoted to exercises in crystallography, X-ray diffraction, optical mineralogy and hand-specimen mineral identification.
Offered: Fall

EES 204W EARTH MATERIALS
The goal of this course is to provide an overview of the chemical and physical properties of the material constituents of the Earth and terrestrial planets, including minerals, rocks and lavas. The class will explore the relationship between the atomic structure and the properties of naturally-occurring solids, and the basic principles that govern the composition and occurrence of these materials. Laboratories are devoted to exercises in crystallography, X-ray diffraction, optical mineralogy and hand-specimen mineral identification. This is a writing requirement section

EES 205 SOLID EARTH GEOPHYSICS
This course is intended for motivated students that are interested in an introduction to geophysics. Material covered will focus on deep Earth processes: an introduction to potential fields, gravity, heat flow, magnetic fields, propagation of seismic waves, and a bottom-up approach to core processes, mantle flow and plate tectonics.
Offered: Fall

EES 206 PETROLOGY & GECHEMISTRY
Distribution, description, classification, and origin of igneous and metamorphic rocks in the light of theoretical-experimental multicomponent phase equilibria studies; use of trace elements and isotopes as tracers in rock genesis; hand specimen and microscopic examinations of the major rock types in the laboratory.
Offered: Spring

EES 206W PETROLOGY & GEOCHEMISTRY-UPPER LEVEL WRITING REQUIREMENT
see EES 206 and EES Departmental Writing Plan. This section fulfills the upper level writing requirement.
Offered: Spring

EES 207 PRINCIPLES OF PALEONTOLOGY
This course is designed to introduce the basic principles of paleontology- the study of fossil organisms in the geological record. Topics to be covered include: taphonomy and the processes of fossilization, principles of evolution as evidenced by the fossil record, taxonomy and the recognition and naming of fossil species, biostratigraphy as a means of dating a rock and/or learning about ancient environments, geochemistry of fossils as a means to understand ancient habitats and behaviors. This course will include an overview of important fossil groups with hands-on experience and a field trip.
Offered: Spring

EES 207W PRINCIPLES OF PALEONTOLOGY
See EES 207 and EES department writing plan. This section fulfills the upper level writing requirement.
Offered: Spring
EES 208 STRUCTURAL GEOLOGY
Geometric analysis of faults, folds, joints, foliation and lineation developed in deformed rocks. Mechanical properties of rock, theories of experimental rock deformation. Labs focus on analysis of structural data using geologic maps, and orthographic and stereographic projections. One-day weekend field trip.
Offered: Fall

EES 211 GEOHAZARDS AND THEIR MITIGATION: LIVING ON AN ACTIVE PLANET
Earthquakes and volcanic eruptions are violent manifestations of plate tectonics, the movement of the relatively rigid plates forming the Earth's outer shell. Ground movements and shaking from these events may generate tsunamis, slumping and mass wasting, and increase risk in other areas. Global and regional sealevel rise changes forces on the plates, motivating reconsideration of hazard assessments. Large volumes of aerosols and greenhouse gases are emitted during the volcanic eruptions, with implications for global climate change. The first third of the class focuses on the causative mechanisms of earthquakes, volcanoes, tsunamis, volcanic-eruption induced climate change. The second third outlines the consequent hazards and forecasting efforts, and feedbacks between these processes. The final third of the course examines mitigation programs, with numerous case studies.
Offered: Spring

EES 211W GEOHAZ AND THEIR MITIGATION
Earthquakes and volcanic eruptions are violent manifestations of plate tectonics, the movement of the relatively rigid plates forming Earth's outer shell. Ground movements and shaking from these events may generate tsunamis, slumping and mass wasting, and increase risk in other areas. Global and regional sealevel rise changes forces on the plates, motivating reconsideration of hazard assessments. Large volumes of aerosols and greenhouse gases are emitted during volcanic eruptions, with implications for global climate change. The first third of the class focuses on the causative mechanisms of earthquakes, volcanoes, tsunamis and volcanic eruption induced climate change. The second third outlines the consequent hazards and forecasting efforts, and feedbacks between these processes. The final third of the course examines mitigation programs, with numerous case studies.
Offered: Spring

EES 212 CLIM CHNG PERS CHEM. OCEAN.
Most introductory courses to chemical oceanography cover a variety of topics that are only related because they are under the broad umbrella of chemical oceanography. Some of these topics include the carbon dioxide and inorganic carbon chemistry, salinity, marine nutrients, dissolved gases and organic constituents. Similarly, most discussions of climate change and chemical oceanography only touch on ocean acidification. This course seeks to provide the same broad prospective to conventional chemical oceanography courses but will interweave the unifying theme of climate change into these numerous and diverse topics.
Offered: Fall

EES 213 HYDROLOGY AND WATER RESOURCES
Physical flow of water through the natural environment and use as a resource for human consumption. Physical and chemical properties, global water balance, basics of hydrology. Understanding and calculating water flows: precipitation, evaporation and evapotranspiration, surface and subsurface runoff, and atmospheric transport. Human uses: storage in dams, hydropower, municipal usage, agriculture, floods and water conservation.
Offered: Fall

EES 213W HYDROLOGY & WATER RESOURCES
See description for EES 213. This is the writing requirement section.
Offered: Fall

EES 214 GEOSPATIAL DATA ANALYSES
This advanced GIS and numerical methods course introduces basic data manipulation and evaluation tools for vector, raster, and 3D data. It serves as a foundation for statistical and spectral data analyses methods, and introduces forward and inverse modeling methods. Topics include review of geographical projections and spectral methods, gridding and kriging, filters, curve fitting and interpolation, least squares, matrix inversion, and numerical integration and differentiation. Assessment is through computer-based problem-solving and a small data analysis project.
Offered: Fall

**EES 215 ENVIRONMENTAL AND APPLIED GEOPHYSICS**
This course aims to image the internal structure of the oceans and continents using geophysical methods. Topics include physical processes occurring within Earth's plates, including solar and internal energy sources, movement of fluids in the oceans and plates. Geophysical methods used to detect these processes and to constrain physical properties, including seismic, electro-magnetic, gravity as measured from surface, subsurface and satellites. Laboratory examples include environmental site remediation, hydrocarbon and mineral exploration, archeological remote sensing, tsunami detection, and groundwater exploration.

Offered: Fall

**EES 216 ENVIRONMENTAL GEOCHEMISTRY**
A course in the chemical and physical processes that shape our environment. These include groundwater flow and contaminant mitigation, chemistry of lakes, streams and the ocean, ocean-atmosphere interactions (ozone depletion) global warming and the greenhouse effect.

Offered: Spring

**EES 216W ENVIRONMENTAL GEOCHEMISTRY**

**EES 218 ATMOSPHERIC GEOCHEMISTRY**
The atmosphere helps to maintain habitable temperatures on our planet's surface, shields life from destructive cosmic and ultraviolet radiation and contains gases such as oxygen and carbon dioxide, which are essential for life. In this course we will work toward an understanding of several important questions. What is in the Earth's atmosphere? What are the sources and sinks of the most important gases in the atmosphere? How does the atmosphere affect the Earth's surface climate? What is the role of photochemistry in atmospheric composition? How does the atmosphere interact with the land and oceans? How has human activity affected the atmosphere?

Offered: Spring

**EES 219 ENERGY AND SOCIETY**
National and worldwide patterns of production and consumption of renewable and non-renewable energy sources and the connection of those patterns to socioeconomic conditions. For each resource, we consider the environmental effects of extraction, distribution, and consumption; how efficiently the resource is used and for what end uses; current reserves and projections for the future; socioeconomic and political factors affecting the resource's utilization. The course addresses interactions between energy use and climate change, food and water resources. The science background will be more emphasized in additional readings and a separate discussion section. Students enrolling in EES 219 will be required to attend a weekly recitation section. NOTE: Juniors and Seniors in the natural sciences and engineering are required to enroll in EES 219.

Offered: Fall

**EES 222 ENERGY RESOURCES**
Examines the mechanisms of oil and natural gas formation: The time, temperature and pressure conditions. Explores the geochemical and isotopic fingerprints that lead to successful exploitation of hydrocarbon resources.

Offered: Spring

**EES 250 SEMINAR IN GEODESY**
This course introduces students to theory and methods in geodesy. Topics include geoid and gravity field derivation and products, space-based geodetic methods, and their use in crustal deformation and mantle dynamics studies.

Offered: Fall

**EES 251 INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS**
This course combines lectures and hands-on weekly labs, to introduce students to Geographic Information Systems (GIS) tools and concepts. Using both commercial (ArcGIS) and open source software (QGIS, OpenLayers), we will cover: GIS data structures, map projections, collecting and creating GIS data, map making, exploring spatial patterns and data visualization. Topics will be framed using examples across disciplines (e.g. physical sciences, humanities and social sciences). At the end
of the semester, students will complete a final project, in which they can apply their learning to their own major area of study. Despite the technical nature of this course, no prerequisites are required and material is appropriate for all students. Student learning will be assessed throughout the semester via class participation, a mid-term exam and the final project.

Offered: Fall

**EES 252 MARINE GEOLOGY**

This course will provide a comprehensive review of modern marine geology with an emphasis on the deep sea. Areas identified by the international ocean drilling community as of high research priority will be discussed, including new techniques used to study such problems. Four subject areas will be addressed: lithosphere, tectonics, ocean history and sedimentary geochemistry and physical processes.

Offered: Spring

**EES 253 GEODYNAMICS**

Processes that create and modify Earth and the terrestrial planets are examined using an "earth engineering" approach. Emphasis is placed on plate tectonics, with discussion of current research in mantle convection. The final third of the course focuses on active plate tectonic boundaries, and evidence for plate tectonics on Mars and Venus.

Offered: Spring

**EES 255 PLANETARY SCIENCE: GEOLOGIC EVOLUTION**

This course will focus on geologic and geophysical studies of planets (interiors and surfaces), and the conditions that led to the origin of life. We will start with initial conditions, defined here as the formation of Earth and the Moon-forming event, and trace development of the planet from cooling of the magma ocean onwards. We next consider how our planetary neighbors (Venus and Mars) evolved, as well as key satellites in the solar system that may harbor life, or provide insight into early conditions on Earth.

Offered: Fall

**EES 255W PLANETARY SCI-GEOL EVOLUTN**

**EES 256 PALEOMAGNETISM & GLOBAL PLATE TECTONICS**

The basic paleomagnetic methods used to determine absolute plate motions are reviewed. Applications include the potential cause and effect relationship between changes in absolute plate motions, mantle plume volcanism, orogeny, and climate change.

Offered: Fall

**EES 257 SEISMIC REFLECTION ANALYSES AND INTERPRETATION**

Geothermal, groundwater and petroleum exploration and extraction rely on subsurface information. 2D and 3D seismic reflection methods are a foundation in many basin regions, as well as crustal studies. Students will review data acquisition and processing methods to understand limitations and potential artifacts in seismic reflection data sets. A major component of the class is a problem-solving project involving seismic reflection data and calibrations with well, rock outcrop and other data. Students will work independently and in teams.

Offered: Spring

**EES 258 HOTSPOTS & PLATE MOTIONS SEMINAR**

This course will provide a basic understanding of hotspot models, hotspot fixity and the relationships between hotspots, mantle plumes, true polar wander and plate motions. Hypothesis development and testing will be discussed, as well as the basic elements of grantsmanship.

Offered: Fall

**EES 258W HOTSPOTS & PLATE MOTIONS**

**EES 259 SEMINAR IN PALEOMAGNETISM**

Current topics in paleomagnetism and rock magnetism are explored through literature reviews and modeling studies. Topics range from the history of plate tectonics to biogenic magnetism. An introduction to basic concepts in paleomagnetism and rock magnetism is included.
Offered: Spring

EES 260 SEMINAR IN EARLY EARTH GEOCHEMISTRY
this course is not being offered at this time
Offered: Spring

EES 261 STABLE ISOTOPE GEOCHEMISTRY
Most courses in stable isotopes highlight the analytical techniques and classic examples of applications of stable isotopes. However, the stable isotope investigations in this course will stress the fundamentals of stable isotope models, along with their underlying assumptions, guided by several classic applications. Not only will we learn the equations used in these pioneering applications, but we will set-up and derive these equations. The goal of this course is to equip students with the knowledge needed to both dissect as well as manipulate traditional stable isotope models so that they can analyze their data in the most appropriate and intelligent fashion.
Offered: Spring

EES 264 PALEOENVIRONMENTAL RECONSTRUCTIONS USING LIGHT STABLE ISOTOPES
This class will focus on techniques used in environmental reconstruction to address questions related to paleoclimate, paleotemperature, paleovegetation and paleoelevation. We will examine the use of stable isotopes in paleoenvironmental reconstruction with particular emphasis on O,C, and to a lesser extent H and N isotopes. The class will start with a thorough introduction of the geological framework of the environments of interest and the processes of light isotope fractionation. This will be followed by "emphasis areas" that highlight the basics and latest developments in a variety of environmental systems, including the oceans, rivers, ice, lakes, soils and fossils.
Offered: Spring

EES 266 ICE CORE RECORDS of CLIMATE AND ENVIRONMENTAL CHANGE
This course is intended for advanced undergraduates and will provide an introduction to the exciting field of ice core research. We will cover the basics of ice core science in the first few sessions, and then continue with more in-depth sessions on some of the most important and interesting questions in the ice core field. A large component of the course will be reading, presentation and discussion of the research literature. Students will be expected to write either an individual or a group review paper on an ice-core related question of their choice.
Offered: Spring

EES 267 ISOTOPE GEOLOGY
Causes for differences in the isotopic composition of elements. Nucleosynthesis, fractionation, radioactive decay and cosmogenic production. Evolution of crust and mantle, formation of ore deposits, tracing of fluid movements, history of cosmic ray flux and other applications of stable and unstable isotopic systems to geologic problems.
Offered: Fall

EES 270 VERTEBRATE PALEONTOLOGY
This course will cover the fossil record of vertebrate animals. Topics to be covered include: The origin of vertebrates, phylogenetic relationships among modern vertebrates, introductory osteology and comparative anatomy of vertebrates, the advent of bone, the transition to land, the origin of flight in vertebrates, the warm-blooded vs cold-blooded controversy in dinosaurs, the relationship between birds and dinosaurs, hominid evolution and the origin of man. Readings from the current scientific literature will be used.
Offered: Spring

EES 270W VERTEBRATE PALEONTOLOGY-UPPER LEVEL WRITING REQUIREMENT
See EES 270 and EES Departmental Writing Plan. This section fulfills the upper level writing requirement.
Offered: Spring

EES 274 SEMINAR IN PALEOCEANOGRAPHY
This class will explore the changes in oceanic circulation through geological time and the tools available to scientists to reconstruct these changes. A general overview of the modern ocean circulation, sediment distribution, and stratigraphy will be given. Paleocceanographic proxies and analytical techniques will be discussed in great detail, with particular emphasis on proxy calibration and technique limitations. Several case studies in the evolution of ocean circulation during the Mesozoic and Cenozoic will be covered, in particular, through the reading and discussion of scientific journal articles.

Offered: Spring

EES 283 SEDIMENTARY BASIN ANALYSIS
We will discuss basin classification schemes, isostasy, flexural and thermal subsidence, effects of mantle dynamics, basin stratigraphy, and techniques used to study sedimentary basin evolution. By determining how sedimentary basins develop and fill, we will better understand the tectonic and eustatic controls on subsidence and surficial processes.

Offered: Fall

EES 283W SEDIMENTARY BASIN ANALYSIS
We will discuss basin classification schemes, isostasy, flexural and thermal subsidence, effects of mantle dynamics, basin stratigraphy, and techniques used to study sedimentary basin evolution. By determining how sedimentary basins develop and fill, we will better understand the tectonic and eustatic controls on subsidence and surficial processes.

Offered: Fall

EES 285 STRUCTURE AND TECTONICS OF MOUNTAIN BELTS
Orogeny and its relationship to plate tectonics. Structural style and tectonic history of mountain belts with special reference to the Appalachians and Cordilleras. Homework assignments involve drawings and interpreting cross-sections through mountain belts. Field trip to the Appalachians to look at typical structures of mountain belts.

Offered: Spring

EES 285W STRUC.&TEC.MTN.BELTS
See EES 285 and EES department writing program. This section fulfills the upper level writing requirement.

Offered: Spring

EES 286 SEMINAR IN SEDIMENTOLOGY & TECTONICS
Interpreting the lithofacies and chemistry of sedimentary rocks to understand paleoenvironment; impact of tectonics on climate. Topics will vary each semester. Classwork will involve readings, presentations and discussions of classic and current literature.

EES 286W SEM.SEDIMENTOLOGY&TECTONICS

EES 287 CLIMATE AND TECTONIC INTERACTIONS
This class will focus on current topics on the interactions between climate and tectonics, such as how the growth of large mountain belts has modulated global climate over time and how climate influences the tectonic evolution of mountain belts. The first several weeks of the semester will be focused on an introduction to the region of study and the climate-tectonic processes of interest. The rest of the class will be focused on a review of recent literature. Students will choose a research topic and develop their grant-writing skill through a class-related project.

Offered: Fall

EES 288 GEOMETRY & MECHANICS OF THRUST FAULTS
Geometry of thrust faults and thrust belts. Mechanics of thrust motion and thrust emplacement. Homework assignments and readings on current literature. Requires one major term paper that will require revision after initial review. Field trip to the Appalachians to look at typical structures of fold-thrust belts

Offered: Spring

EES 288W GEO & MECH OF THRUST FAULTS
See EES 288 and EES Departmental Writing Plan. This section fulfills the upper level writing requirement

Offered: Spring
EES 298 ANcient Roman Aqueduct of Arezzo-Field Course
This course provides a unique opportunity to learn about and participate in a collaborative international research project aimed at tracing the route of the ancient Roman aqueduct of Arezzo, Italy. Students receive instruction in the engineering of the ancient Roman aqueducts, geophysical prospection, archaeological research, and the history and archaeology of ancient Arezzo. The class is taught on site in Arezzo, Italy, where students also learn through hands-on work to carry out archaeological excavation and geophysical prospection using a magnetic gradiometer and ground-penetrating radar. This course meets the field course requirement for Earth and Environmental Science.
Offered: Fall Summer

EES 299 Field Geology
This course covers the essential geologic and geophysical approaches to field stratigraphy, mapping, and structural interpretation. The coursework is based on observations made during a substantial field excursion (usually six weeks long). Additional credit may be earned by laboratory analysis of samples collected during the field excursion.

EES 299W Field Geology
This course covers the essential geologic and geophysical approaches to field stratigraphy, mapping, and structural interpretation. The coursework is based on observations made during a substantial field excursion (usually six weeks long). Additional credit may be earned by laboratory analysis of samples collected during the field excursion.

EES 307 Adv Sem Climate & Env Chng
This seminar will focus on the IPCC 2013 Working Group I report (Physical Science Basis). The IPCC stands for Intergovernmental Panel on Climate Change and is the main international organization for assessing the current state of scientific knowledge for global climate change. The IPCC reports are a result of contributions from thousands of scientists from all over the world, and are a comprehensive summary of the current state of climate change research. The course will be conducted in a reading-and-discussion format. Students will be expected to lead some of the discussions as well as actively participate in all of the discussions.
Offered: Fall

EES 310 Multidis.Topics Sustainabil
The goal of this course is to acquaint students with a range of topics in the natural and social sciences that relate to environmental change. Students will attend weekly lectures in the Sustainability Speakers Series, to be given by faculty from around the University of Rochester and neighboring institutions. In addition to attending lectures, students will read material relevant to each week's lecture topics, and participate in discussions that will follow the lectures. Grading will be based on attendance and active participation in lectures and discussions, as well as periodic written assignments.
Offered: Spring

EES 312W Research Ocean Biogeochem I
This course will follow the scientific process conducting oceanographic research in the laboratory and at sea. This course will begin during the Spring semester and extend into summer with a research expedition at sea lasting approximately 2 weeks and will conclude during the Fall semester (EES 313W). During the Spring (EES 312W) this course will meet for 2 credit hours. Students work together and with instructor to develop scientific hypotheses related to modern oceanographic biogeochemical processes. Students develop experimental plans to test hypotheses, formulate written research proposal and begin their experiments. During the summer students will enact their scientific plan at sea collecting samples and making measurements with the instructor, other scientists and graduate students. During the Fall semester (EES 313W) students reconvene for additional 2 credits to analyze data and create formal presentations of their scientific work in both written and oral formats.
Offered: Spring

EES 313W Res Ocean Biogeochem II

EES 314W Top Quaternary Geomorphology
Investigate glacial environments in terms of sediments and landforms with a particular focus on the Laurentide Ice Sheet. Detailed, ongoing research on subglacial environments, glacial sedimentology and Quaternary geochronology are presented. Practical exercises studying landform assemblages and surficial sediments provide a comprehensive knowledge base with which
interpretation of glacier processes and history can be made. This is a closure course class for EVS and ESP majors and will involve a research project based on one of the topics of discussion in the class.

Offered: Spring

**EES 319W ENERGY DECISIONS**

**EES 320 SUSTAINABLE SYSTEMS**
Definitions and metrics of sustainability. Properties of systems. Relevant issues at different scales, from building to campus to community. Resource use, waste production, procurement policies, transportation, and social dimensions. This is a closure course for EVS and ESP majors

Offered: Spring

**EES 320W SUSTAINABLE SYSTEMS**
See EES 320 and EES Department Writing Plan. This section fulfills the upper level writing requirement.

Offered: Spring

**EES 352 EES ISS IN GROUP LEADERSHIP**
Designed for Workshop leaders. This course offers training in group dynamics, learning theory and science pedagogy. The larger goals for this course are to develop leadership skills, to foster ongoing communication among faculty members and Workshop leaders, and to provide an environment for focused review of Workshop modules. This section of CAS/EES 352 will train undergraduate Workshop leaders for Introduction to Geological Sciences (EES 101)

Offered: Fall

**EES 390 SUPERVISED COLLEGE TEACHING**
Attendance of all primary class lectures. Assist in at least one laboratory session per week and general preparation for answering student questions. Preparation and delivery of at least one laboratory lecture and summary discussion following the lab. Assistance with setup and dismantling of extensive lab displays of rocks, fossils and maps. Assistance with grading of lab quizzes and homework assignments and in proctoring exams.

Offered: Fall Spring

**EES 391 INDEPENDENT STUDY**
Students must have permission. Interested students should meet with their advisor regarding course content.

Offered: Fall Spring

**EES 391W INDEPENDENT STUDY IN EARTH AND ENVIRONMENTAL SCIENCES-UPPER LEVEL WRITING REQUIREMENT**
Permission of instructor required. See EES 391 and EES Departmental Writing Plan. This section fulfills the upper level writing requirement.

Offered: Fall Spring

**EES 393 SENIOR THESIS**
Students should seek out the faculty member he/she wishes to do a senior thesis with. Students should pick up independent course forms from Lattimore 312. Course is suited to each students abilities. Questions should be directed to your major advisor

Offered: Fall Spring

**EES 393W SENIOR THESIS-UPPER LEVEL WRITING REQUIRMENT**
See EES 393 and EES Departmental Writing Plan. This section fulfills the upper level writing requirement. Students should seek out the faculty member he/she wishes to do a senior thesis with. Students should pick up independent course forms from Lattimore 312. Course is suited to each students abilities. Questions should be directed to your major advisor.

Offered: Fall Spring
EES 394 INTERNSHIP IN EARTH AND ENVIRONMENTAL SCIENCES
Students should contact their major advisor for details. Closure course for Environmental Studies majors (ESP) and Environmental Science majors (EVS)
Offered: Fall Spring

EES 395 INDEPENDENT RESEARCH

EES 396 SPECIAL TOPICS IN EES

EES 405 SOLID EARTH GEOPHYSICS

EES 406 PETROLOGY & GEOCHEMISTRY
Distribution, description, classification, and origin of igneous and metamorphic rocks in the light of theoretical-experimental multicomponent phase equilibria studies; use of trace elements and isotopes as tracers in rock genesis; hand specimen and microscopic examinations of the major rock types in the laboratory.
Offered: Spring

EES 407 ADV SEM CLIMATE & ENV CHNG
This seminar will focus on the IPCC 2013 Working Group I report (Physical Science Basis). The IPCC stands for Intergovernmental Panel on Climate Change and is the main international organization for assessing the current state of scientific knowledge for global climate change. The IPCC reports are a result of contributions from thousands of scientists from all over the world, and are a comprehensive summary of the current state of climate change research. The course will be conducted in a reading-and-discussion format. Students will be expected to lead some of the discussions as well as actively participate in all of the discussions
Offered: Fall

EES 411 GEOHAZ AND THEIR MITIGATION
Earthquakes and volcanic eruptions are violent manifestations of plate tectonics, the movement of the relatively rigid plates forming Earth’s outer shell. Ground movements and shaking from these events may generate tsunamis, slumping and mass wasting, and increase risk in other areas. Global and regional sea level rise changes forces on the plates, motivating reconsideration of hazard assessments. Large volumes of aerosols and greenhouse gases are emitted during volcanic eruptions, with implications for global climate change. The first third of the class focuses on the causative mechanisms of earthquakes, volcanoes, tsunamis and volcanic eruption induced climate change. The second third outlines the consequent hazards and forecasting efforts, and feedbacks between these processes. The final third of the course examines mitigation programs, with numerous case studies.
Offered: Spring

EES 412 CLIM CHNG PERS CHEM. OCEAN.
Most introductory courses to chemical oceanography cover a variety of topics that are only related because they are under the broad umbrella of chemical oceanography. Some of these topics include the carbon dioxide and inorganic carbon chemistry, salinity, marine nutrients, dissolved gases and organic constituents. Similarly, most discussions of climate change and chemical oceanography only touch on ocean acidification. This course seeks to provide the same broad prospective to conventional chemical oceanography courses but will interweave the unifying theme of climate change into these numerous and diverse topics.
Offered: Fall

EES 412W RES OCEAN BIOGEOCHEM I
EES 413W RES OCEAN BIOGEOCHM II
EES 414 GEOSPATIAL DATA ANALYSES
EES 416 ENVIRONMENTAL GEOCHEMISTRY
**EES 418 ATMOSPHERIC GEOCHEMISTRY**
The atmosphere helps to maintain habitable temperatures on our planet's surface, shields life from destructive cosmic and ultraviolet radiation and contains gases such as oxygen and carbon dioxide, which are essential for life. In this course we will use lectures, discussions and hands-on activities to work toward an understanding of several important questions. How did the Earth acquire and atmosphere? What is in the Earth's atmosphere? What are the sources and sinks of the most important gases in the atmosphere? What is the role of photochemistry in atmospheric composition? How does the atmosphere interact with the land and oceans? How has human activity affected the atmosphere?
Offered: Spring

**EES 422 ENERGY RESOURCES**

**EES 450 SEMINAR IN GEODESY**
This course introduces students to theory and methods in geodesy. Topics include geoid and gravity field derivation and products, space-based geodetic methods, and their use in crustal deformation and mantle dynamics studies.
Offered: Fall

**EES 451 GEOSPATIAL ANALYSES AND 3D VISUALIZATION-THIS COURSE IS NO LONGER BEING OFFERED**
Classes and computer labs outline the logic and structure of Geographic Information Systems (GIS) including geographic coordinate systems and their transformations, map and 3D representations and rotations on a sphere and their transformations, statistical and spatial analyses of diverse data sets linked by common geographic coordinates. With these tools, students learn how to compile, display and analyze spatial patterns to solve problems, detect trends, and develop analytical procedures. Students will work with GoogleEarth and kml, command-line software (GMT) and commercial software ArcGIS. Computer laboratory exercises involve some statistical and mathematical analyses. Assessment is through two mid-terms, computer laboratory assignments, and a final case study project.

**EES 452 MARINE GEOLOGY**

**EES 453 GEODYNAMICS**

**EES 455 PLANETARY SCI-GEOL EVOLUTN**

**EES 456 PALEOMAG/GLOBAL PLATE TECH**

**EES 457 SEISMIC REFLECTION ANALYSES AND INTERPRETATION**
Geothermal, groundwater and petroleum exploration and extraction rely on subsurface information. 2D and 3D seismic reflection methods are a foundation in many basin regions, as well as crustal studies. Students will review data acquisition and processing methods to understand limitations and potential artifacts in seismic reflection data sets. A major component of the class is a problem-solving project involving seismic reflection data and calibrations with well, rock outcrop and other data. Students will work independently and in teams.
Offered: Spring

**EES 458 HOTSPOTS & PLATE MOTIONS**
This course will provide a basic understanding of hotspot models, hotspot fixity and the relationships between hotspots, mantle plumes, true polar wander and plate motions. Hypothesis development and testing will be discussed, as will the basic elements of grantsmanship.
Offered: Fall

**EES 459 SEMINAR IN PALEOMAGNETISM**
Current topics in paleomagnetism and rock magnetism are explored through literature reviews and modeling studies. Topics range from the history of plate tectonics to biogenic magnetism. An introduction to basic concepts in paleomagnetism and rock magnetism is included.
Offered: Spring
EES 460 SEMINAR-EARLY EARTH GEOCHEM
This course is about the geochemical and geophysical processes of the earliest Earth. It will explore topics such as the formation of the Moon, the early accretionary history, the origin(s) of life, the nature of the earliest igneous and sedimentary crust, the composition of the atmosphere, and the timing of core formation. Students will learn how to effectively leverage extremely limited geochemical and geophysical constraints in order to support useful conclusions. Before enrolling in this course, students should be comfortable with the basic principles of geochemistry.
Offered: Spring

EES 461 STABLE ISOTOPE GEOCHEMISTRY
Most courses in stable isotopes highlight the analytical techniques and classic examples of applications of stable isotopes. However, the stable isotope investigations in this course will stress the fundamentals of stable isotope models, along with their underlying assumptions, guided by several classic applications. Not only will we learn the equations used in these pioneering applications, but we will set-up and derive these equations. The goal of this course is to equip students with the knowledge needed to both dissect as well as manipulate traditional stable isotope models so that they can analyze their data in the most appropriate and intelligent fashion.
Offered: Spring

EES 463 INTRO THERMODYNAMICS AND KINETICS
The goal of this course is to provide an overview of the equilibrium and kinetic processes that govern the elemental and isotopic composition of rocks and minerals. The course will be divided into two broadly equal components. In the first part, the fundamentals of thermodynamics, phase diagrams, and selected examples in earth systems will be explored. The second half of the course is devoted to understanding the non-equilibrium case for earth materials; diffusion in minerals and melts is emphasized. Students are expected to have a general knowledge of mineralogy, petrology, and very basic thermodynamics prior to taking the course.
Offered: Fall

EES 464 PALEOENV.RECONSTRUCTIONS USING LIGHT STABLE ISOTOPES
This class will focus on techniques used in environmental reconstruction to address questions related to paleoclimate, paleotemperature, paleovegetation and paleoelevation. We will examine the use of stable isotopes in paleoenvironmental reconstructions with particular emphasis on O,C, and to a lesser extent H and N isotopes. The class will start with a thorough introduction of the geological framework of the environments of interest and the processes of light isotope fractionation. This will be followed by "emphasis areas" that highlight the basics and latest developments in a variety of environmental systems, including the oceans, rivers, ice, lakes, soils and fossils.
Offered: Spring

EES 466 ICE CORE RECORDS OF CLIMATE AND ENVIRONMENTAL CHANGE
This course is intended for graduate students and advanced undergraduates and will provide an introduction to the exciting field of ice core research. We will cover the basics of ice core science in the first few sessions, and then continue with more in-depth sessions on some of the most important and interesting questions in the ice core field. A large component of the course will be reading, presentation and discussion of the research literature. Students will be expected to write either an individual or a group review paper on an ice-core related question of their choice.
Offered: Spring

EES 467 ISOTOPE GEOLOGY
Causes for differences in the isotopic composition of elements. Nucleosynthesis, fractionation, radioactive decay and cosmogenic production. Evolution of crust and mantle, formation of ore deposits, tracing of fluid movements, history of cosmic ray flux and other applications of stable and unstable isotopic systems to geologic problems.
Offered: Fall

EES 474 SEMINAR IN PALEOCEANOGRAPHY

EES 480 MAT PROP OF DEFORMED ROCKS
Elastic, linear and nonlinear viscons and perfectly plastic behavior of rocks. Effect of dislocation and diffusional creep, grain boundary sliding, microfracturing and recrystallization on rocks. Study of microstructures to determine macroscopic flow laws.

Offered: Fall

EES 481 MICROTECTONICS
Study of microstructures, fabric and textures in rocks to define deformation patterns, deformation mechanics and flow laws.

Offered: Fall

EES 483 SEDIMENTARY BASIN ANALYSIS
We will discuss basin classification schemes, isostasy, flexural and thermal subsidence, effects of mantle dynamics, basin stratigraphy, and techniques used to study sedimentary basin evolution. By determining how sedimentary basins develop and fill, we will better understand the tectonic and eustatic controls on subsidence and surficial processes.

Offered: Fall

EES 484 STRESS & STRAIN IN ROCKS

EES 485 STRUCT & TEC MTN BELTS

EES 486 SEM.SEDIMENTOLOGY&TECTONICS

EES 487 CLIMATE AND TECTONIC INTERACTIONS
This class will focus on current topics on the interactions between climate and tectonics, such as how the growth of large mountain belts has modulated global climate over time and how climate influences the tectonic evolution of mountain belts. The first several weeks of the semester will be focused on an introduction to the region of study and the climate-tectonic processes of interest. The rest of the class will be focused on a review of recent literature. Students will choose a research topic and develop their grant-writing skill through a class-related project.

Offered: Fall

EES 488 GEOMETRY AND MECHANICS OF THRUST FAULTS
Geometry of thrust faults and thrust belts. Mechanics of thrust motion and thrust emplacement. Homework assignments and readings on current literature. Field trip to the Appalachians to look at typical structures of fold-thrust belts.

Offered: Spring

EES 490 SUPERVISED COLLEGE TEACHING

Offered: Fall Spring

EES 491 MASTER’S READINGS IN GEOLOGY

Offered: Fall Spring

EES 492 GRADUATE FIELD SEMINAR

EES 493 MASTER’S ESSAY

Offered: Fall Spring

EES 495 MASTER’S RESEARCH IN GEOLOGY

Offered: Fall Spring

EES 499 RESEARCH FRONTIERS IN EARTH SCIENCES

Offered: Fall Spring

EES 591 PHD READINGS IN GEOLOGY
Offered: Fall Spring

**EES 594 PHD RESEARCH INTERNSHIP**

**EES 595 PHD RESEARCH IN GEOLOGY**
Offered: Fall Spring

**EES 595A PHD RESEARCH IN ABSENTIA**

**EES 595B PHD RESEARCH IN ABSENTIA ABROAD**

**EES 890 SUMMER IN RESIDENCE - MA**

**EES 895 CONT OF MASTER'S ENROLLMENT**

**EES 897 MASTERS DISSERTATION**

**EES 899 MASTER'S DISSERTATION**
Offered: Fall Spring

**EES 985 LEAVE OF ABSENCE**

**EES 986V FULL TIME VISITING STUDENT**

**EES 990 SUMMER IN RESIDENCE**

**EES 995 CONT OF DOCTORAL ENROLLMENT**

**EES 997 DOCTORAL DISSERTATION**

**EES 999 DOCTORAL DISSERTATION**
Offered: Fall Spring

**EES 999A DOCT DISSERTATN IN ABSENTIA**

**ENG 100 GREAT BOOKS**
Provides a close reading of a selection of literary masterpieces. Readings vary from year to year.
Offered: Fall Spring

**ENG 101 MAXIMUM ENGLISH**
A gateway course introducing students to basic concepts and skills, and to the particular features of the English department and its faculty.
Offered: Fall Spring

**ENG 105 AFRO FUTURE FEMALES**

**ENG 110 JUSTICE AND EQUALITY**

**ENG 111 INTRODUCTION TO SHAKESPEARE**
A selection of his major plays.
Offered: Fall Spring
ENG 112 CLASSICAL & SCRIPTURAL BACKGROUNDS
The great tradition, from Homer, Greek drama, Plato, and Virgil to the Bible and Dante. Same as REL 140.
Offered: Fall Spring

ENG 113 BRITISH LITERATURE I
An introductory study of early British literature, its forms and themes, and the development of our literary tradition.
Offered: Fall Spring

ENG 114 BRITISH LITERATURE II
Major themes and central ideas in British literature of the eighteenth, nineteenth, and twentieth centuries.
Offered: Fall Spring

ENG 115 SURVEY OF AMERICAN LITERATURE
Significant achievements by American writers of poetry, fiction, and other prose in the nineteenth and twentieth centuries.
Offered: Fall Spring

ENG 116 INTRODUCTION TO AFRICAN-AMERICAN LITERATURE
A survey of African-American literature, fiction, and nonfiction, beginning with the late eighteenth century.
Offered: Fall Spring

ENG 117 INTRODUCTION TO THE ART OF FILM
This course will present the concepts of film form, film aesthetics, and film style, while remaining attentive to the various ways in which cinema also involves an interaction with audiences and larger social structures. Same as AH 112 and FMS 132.
Offered: Fall Spring

ENG 118 INTRODUCTION TO MEDIA STUDIES
The cultural, aesthetic, and economic history of visual media. Same as FMS 131.
Offered: Fall Spring

ENG 120 INTRODUCTION TO CREATIVE WRITING
Introductory workshop exploring multiple genres.
Offered: Fall Spring

ENG 121 CREATIVE WRITING: FICTION
Short story workshop.
Offered: Fall Spring

ENG 122 CREATIVE WRITING: POETRY
Poetry writing workshop.
Offered: Fall Spring Summer

ENG 123 PLAYWRITING
Credit 2 hours. A course devoted to the understanding and execution of dramatic writing that is unique to the theater.
Offered: Fall Spring

ENG 125 SPECULATIVE FICTION
A creative writing course dedicated to commercial and/or literary fiction with an emphasis on science fiction, fantasy, and magic realism.
Offered: Fall Spring
ENG 126 WRITING WOMEN'S LIVES
The writing and study of such nonfictional forms as memoir and autobiographical narrative.
Offered: Fall Spring

ENG 131 REPORTING & WRITING THE NEWS
A laboratory course (requiring typing) on the fundamentals of gathering, assessing, and writing news.
Offered: Fall Spring

ENG 132 FEATURE WRITING
A workshop administered by the Department of English and the Gannett Newspapers.
Offered: Fall Spring

ENG 133 EDITING
Practicum seminar on editing a newspaper, with special attention to the Campus Times.
Offered: Fall Spring

ENG 134 PUBLIC SPEAKING
Practice in effective small-group communication and the presentation of expository and persuasive speeches.
Offered: Fall Spring

ENG 135 INTRODUCTION TO DEBATE
Critical thinking and reasoned decision making through argumentation.
Offered: Fall Spring

ENG 138 JOURNALISM CASE STUDIES
Working in groups, students investigate a specific topic with the goal of producing a comprehensive, readable and visually compelling news report for a variety of media. Involves research, interviews of experts and ordinary people with personal knowledge of the topic. Past projects have examined hunger in Rochester, children's health issues and the impact of the recession upon resident.
Offered: Fall Spring

ENG 161 INTRODUCTORY VIDEO & SOUND
The basic aesthetic and technical elements of video production. Emphasis on the creative use and understanding of the video medium while learning to use the video camera, video editing processes, and the fundamental procedures of planning video projects. Video techniques will be studied through screenings, group discussions, readings, practice sessions and presentations of original video projects.
Offered: Fall Spring

ENG 170 TECHNICAL THEATER
Introductory course to the theories, methods, and practice of set construction, power tools, rigging, stage lighting, drafting, sound, and scene painting. Lab participation in theater program productions required.
Offered: Fall

ENG 171 TECHNICAL THEATER
Introductory course to the theories, methods, and practice of set construction, power tools, rigging, stage lighting, drafting, sound, and scene painting. Lab participation in theater program productions required.
Offered: Spring

ENG 172 INTRODUCTION TO STAGE LIGHTING & SOUND
Introduce students to the various elements of theater design. Lighting techniques, sound design, and set design are all covered from time to time.
Offered: Fall

**ENG 173** INTRO TO STAGE LIGHTING & SOUND

**ENG 174** ACTING TECHNIQUES I & ACTING LAB
Training in the techniques by which individual actors set forth the characters recorded in dramatic texts.
Offered: Fall

**ENG 175** ACTING TECHNIQUES II
Training in the techniques by which individual actors set forth the characters recorded in dramatic texts.
Offered: Spring

**ENG 176** VOICE & MOVEMENT FOR ACTOR
This is an introductory course on voice and movement for the actor.

**ENG 177** VOICE & MOVEMENT FOR THE ACTOR
This is an introductory course on voice and movement for the actor.

**ENG 178** DESIGN FOR STAGE: LIGHTING

**ENG 179** DESIGN FOR THE STAGE: LIGHTING

**ENG 180** DIRECTING & DIRECTING LAB
Introductory directing techniques for aspiring directors. Exploring the nature of the theatrical events, investigate the nature of conceptualization, visualization, text analysis, action and design as they pertain to the director's craft. In conjunction with a weekly scheduled lab.
Offered: Fall

**ENG 200** HISTORY OF THE ENGLISH LANGUAGE
The development of the English language from the Anglo Saxon period on up, focusing on texts from representative periods.
Offered: Fall Spring

**ENG 201** OLD ENGLISH LANGUAGE & LITERATURE
Literature written in England before the Norman Conquest. Latin works are read in translation; vernacular works, in the original.
Offered: Fall Spring

**ENG 202** MIDDLE ENGLISH LITERATURE
Poetry, prose, and drama of the thirteenth, fourteenth, and fifteenth centuries, exclusive of Chaucer. Readings in Middle English.
Offered: Fall Spring

**ENG 203** MEDIEVAL DRAMA
English drama from its beginnings until 1580, including material from the mystery cycles, moralities, and early Tudor drama.
Offered: Fall Spring

**ENG 204** CHAUCER
The principal works of Chaucer, in their historical and intellectual context. Readings in Middle English. Same as REL 208.
Offered: Fall Spring
ENG 205  MYSTICAL LITERATURE

ENG 206  STUDIES IN MEDIEVAL LITERATURE
Varying topics relating to the literature and culture of the Middle Ages.
Offered: Fall Spring

ENG 207  ENGLISH RENAISSANCE LITERATURE
Sixteenth-century literature from Sir Thomas More to Spenser, with some attention to the continental background.
Offered: Fall Spring

ENG 208  ELIZABETH AND JACOBEAN DRAMA
English Renaissance drama through 1642, exclusive of Shakespeare.
Offered: Fall Spring

ENG 209  SHAKESPEARE'S TRAGEDIES

ENG 210  SHAKESPEARE
Readings of a selection of Shakespeare's plays.
Offered: Fall Spring

ENG 211  MILTON
The works of Milton in their historical and intellectual context.
Offered: Fall Spring

ENG 213  STUDIES IN RENAISSANCE LITERATURE
Varying topics relating to the literature and culture of the Renaissance and Early Modern periods.
Offered: Fall Spring

ENG 215  EARLY BRITISH NOVEL
The novel from its beginnings to the early nineteenth century, emphasizing such novelists as Defoe, Fielding, Richardson, and Austen.
Offered: Fall Spring

ENG 217  STUDIES IN EIGHTEENTH-CENTURY LITERATURE
Varying topics relating to the literature and culture of England in the period from roughly 1660 to 1800.
Offered: Fall Spring

ENG 220  ROMANTIC LITERATURE
Major writers, other than novelists, of the early nineteenth century, with particular emphasis on poets from Blake through Keats.
Offered: Fall Spring Summer

ENG 221  VICTORIAN LITERATURE
The major intellectual, cultural, and artistic developments of the Victorian period (1830–1900), in prose, drama, verse, and related arts.
Offered: Fall Spring Summer

ENG 222  NINETEENTH-CENTURY BRITISH NOVEL
Emphasizing such novelists as Dickens, Thackeray, Eliot, and Hardy.
Offered: Fall Spring
ENG 223 STUDIES IN NINETEENTH-CENTURY LITERATURE
Varying topics relating to the literature and culture of England in the nineteenth century.
Offered: Fall Spring

ENG 226 AMERICAN REALISM
From 1886 to 1912, including poetry by Dickinson and Frost; realist and naturalist fiction by Twain, Wharton, James, Dreiser; representative nonfiction and philosophy.
Offered: Fall Spring

ENG 227 AMERICAN MODERNS
From 1913 to 1941, including Eliot, Stevens, Cather, Faulkner, Hemingway, Fitzgerald, O'Neill, W. C. Williams, and others.
Offered: Fall Spring

ENG 228 AFRICAN-AMERICAN DRAMA
Study of dramatic works by African-American playwrights during the twentieth and twenty-first century.
Offered: Fall Spring

ENG 229 AMERICAN FICTION SINCE 1980

ENG 230 STUDIES IN AMERICAN LITERATURE
Varying topics relating to the literature and culture of the Americas.
Offered: Fall Spring

ENG 231 TWENTIETH-CENTURY BRITISH NOVEL
The novel from 1900 to the present, emphasizing such novelists as Conrad, Joyce, Woolf, and Lawrence.
Offered: Fall Spring

ENG 233 MODERN POETRY
An introduction to representative twentieth-century poetry.
Offered: Fall Spring

ENG 234 MODERN FICTION
Studies in the principle writers of novels and short fiction in the early and mid twentieth century.
Offered: Fall Spring

ENG 236 CONTMP FICTN:NARR OF US IMM
Readings in American, British, and Anglophone fiction from second half of the 20th-Century and the beginning of the 21st-Century.
Offered: Fall Spring Summer

ENG 237 STUDIES IN INTERNATIONAL LITERATURE
Poetry in English from around 1945 to the present, emphasizing latter-day transformations.
Offered: Fall Spring

ENG 238 STUDIES IN MODERN AND CONTEMPORARY LITERATURE
Varying topics relating to the literature – prose, poetry, and drama – of the later twentieth and twenty-first centuries.
Offered: Fall Spring Summer

ENG 240 LITERARY CRITICISM AND THEORY
Study of the methods and conceptual backgrounds of the theoretical study of literature and literary analysis.
Offered: Fall Spring

**ENG 242 TOPICS IN LITERATURE**
Readings vary according to subject.
Offered: Fall Spring

**ENG 243 STUDIES IN A MAJOR AUTHOR**
Intensive study of the writings of a single author or small group of authors from British or American literary traditions.
Offered: Fall Spring

**ENG 244 STUDIES IN A LITERARY TRADITION**
A study of a body of works of literature seen through their particular links to a tradition or historical genre.
Offered: Fall Spring

**ENG 245 STUDIES IN LITERARY MODE**
Readings vary according to subject.
Offered: Fall Spring

**ENG 247 SCIENCE FICTION**
Examines a range of science fiction texts and issues, including works by Mary Shelley, H. G. Wells, Isaac Asimov, Robert Heinlein, Samuel R. Delany, and more.
Offered: Fall Spring

**ENG 249 GENDER,WRITING & REPRESENTATION**
The interrelation among the gendered dimensions of writing and representation.
Offered: Fall Spring Summer

**ENG 250 LITERATURE AND ETHNICITY**
A review of the interrelated concepts.
Offered: Fall Spring

**ENG 252 THEATER IN ENGLAND**
A four-credit intersession course conducted in London, UK, late December - early January. We'll see, discuss, write on 16 - 18 plays. This year includes world premieres of plays by Alan Bennett, John Logan, Lee Hall, and David Hare; Shakespeare's Twelfth Night, Tennessee Williams's Cat on a Hot Tin Roof, John Guare's Six Degrees of Separation, Tom Stoppard and Andre Previn's Every Good Boy Deserves a Favour, several musicals, and splendid extravaganzas from the National Theatre such as War Horse and Nation, to name a few.
Offered: Fall Spring

**ENG 254 ARTHURIAN TRADITIONS**
The origins and later developments of the chivalric romance tradition centering on the legends of King Arthur and his knights.
Offered: Fall Spring Summer

**ENG 255 FILM HISTORY: EARLY CINEMA**
Intro to history, technology, cultural significance of motion pictures of the "pre-sound" era, screenings of 35mm prints accompanied by live music in the Dryden Theatre. Special attention to major pioneers, Dickson, Porter, Lumière, Méliès, and Griffith, including a variety of internationally produced films selected from the world-famous archival film collection of the George Eastman House. Same as FMS 247
Offered: Fall Spring
ENG 256 FILM HISTORY: 1929-1959
A transnational survey of film history, examining the technical and formal aspects of the medium in its production and exhibition. Same as FMS 248.
Offered: Fall Spring

ENG 257 FILM HISTORY: 1959-PRESENT
This course will explore the developments in world cinema—industrial, technological, social, and political—in the second half of the sound period (1959 to the present). Same as FMS 249.
Offered: Fall Spring

ENG 258 FILM ANALYSIS
Not offered anymore.

ENG 259 POPULAR FILM GENRES
An intensive study of selected types of popular films in their larger cultural context. Same as FMS 251.
Offered: Fall Spring Summer

ENG 260 STUDIES IN FILM HISTORY
Special topics in the history of film, including specific periods, movements, or comparative topics.
Offered: Fall Spring

ENG 261 FILM THEORY
An introduction to the history, the theory, and especially the practice of criticism. Same as FMS 255.
Offered: Fall Spring

ENG 262 STUDIES IN A NATIONAL CINEMA
Films from a particular national cinema—British, Japanese, German, French, Italian, and others from various periods.
Offered: Fall Spring

ENG 263 MEDIA STUDIES
This course addresses the history and theory of a range of communications media and visual technologies in science, industry, and popular culture.
Offered: Fall Spring

ENG 264 STUDIES IN A DIRECTOR
Intensive study of the body of work of a single film director.
Offered: Fall Spring Summer

ENG 265 ISSUES IN FILM
The course takes up particular concepts, ideas, and ideology in film, often spanning periods, nations, and genres.
Offered: Fall Spring

ENG 267 TOPICS IN MEDIA STUDIES
Same as FMS 259.
Offered: Fall Spring

ENG 268 FILM: THE MATTER WITH MEN
Instruction in curatorial and preservation standards for motion picture, video, digital and audio materials with a contextual focus on museum, library and archive institutions.
Offered: Fall Spring Summer
ENG 269 MUSEUM PRACTICE
Restricted to Selznick Students
Offered: Fall Spring Summer

ENG 270 ADVANCED TECHNICAL THEATER
Investigate technical theater beyond the realms of Eng 170/171 (Technical Theater). Focus on work related to the scenic design and technical production of the semester's Theatre Program productions. Working in small seminars and one-on-one tutorials. Instructor will assist students in learning more in the chosen technical areas and about problem-solving scenic and technical questions raised by the set/s being built.
Offered: Fall

ENG 271 ADVANCED TECHNICAL THEATER
Investigate technical theater beyond the realms of Eng 170/171 (Technical Theater). Focus on work related to the scenic design and technical production of the semester's Theatre Program productions. Working in small seminars and one-on-one tutorials. Instructor will assist students in learning more in the chosen technical areas and about problem-solving scenic and technical questions raised by the set/s being built.
Offered: Spring

ENG 273 MOVEMENT MASTERCLASS ACTOR

ENG 275 ADVANCED CREATIVE WRITING: FICTION
Seminar in fiction writing. Emphasis on individual development of style.
Offered: Fall Spring

ENG 276 Advanced Creative Writing: Poetry
Advanced creative writing workshop in poetry. Work by various contemporary poets will provide the framework for explorations into technique and poetic narrative.
Offered: Fall Spring

ENG 277 SCREENWRITING WORKSHOP
The primary text for this course is students' own scripts in progress. The course also examines various professional scripts, both film and television.
Offered: Fall Spring

ENG 278 ADVANCED PLAYWRITING

ENG 280 ADVOCACY, ACTIVISM & PERF DEBATE

ENG 281 SPECIAL TOPICS IN JOURNALISM
Literary Journalism
Offered: Fall Spring

ENG 282 EDITING AND DESKTOP PUBLISHING
Students study works as selected by instructor and write their own pieces in this genre.
Offered: Fall Spring

ENG 283 MEDIA ABC: THE DIGITAL PAGE
Provides a historical and critical introduction to the idea of medium and media, including books, paint, electronic files, music, photography, etc.
Offered: Fall Spring
**ENG 284 ORALITY, LANGUAGE & LITERACY**
An inquiry into how literacy capability at different historical moments has affected the uses of texts, performances, and speech genres. Attention is given to literary, sacred, and secular texts.
Offered: Fall Spring

**ENG 285 ADVANCED WRITING & PEER TUTORING**
This course prepares selected undergraduates for work as writing advisors.
Offered: Fall Spring

**ENG 286 PRESIDENTIAL RHETORIC**
Critical examination of the public rhetoric and political themes of the modern American presidency.
Offered: Fall Spring

**ENG 287 STUDIES IN TRANSLATION**
A study of the theoretical backgrounds, practical challenges, and creative activity of literary translation.
Offered: Fall Spring

**ENG 288 WRITING IN A DIGITAL WORLD**

**ENG 290 PLAYS IN PRODUCTION: CURRENT SEMESTER**
Set building, prop and costume development, and publicity for current production.
Offered: Fall

**ENG 291 PLAYS IN PRODUCTION: CURRENT SEMESTER**
Set building, prop and costume development, and publicity for current production.
Offered: Spring

**ENG 292 PLAYS IN PERFORMANCE: CHANGES/SEMESTER**
For actors and stage managers working on the current production
Offered: Fall

**ENG 293 PLAYS IN PERFORMANCE: CURRENT SEMESTER**
For actors and stage managers working on the current production.
Offered: Spring

**ENG 294 PLAYS IN PERFORMANCE: CHANGES/SEMESTER**
For actors and stage managers working on the current production.
Offered: Fall

**ENG 295 PLAYS IN PERFORMANCE: CHANGES/SEMESTER**
For actors and stage managers working on the current production.
Offered: Spring

**ENG 296 STAGE MANAGEMENT: FALL TERM**
Students in Stage Management (fall/spring) will get an in-depth introduction to and immersion in stage managing a theatrical production. In addition, cover all areas of management skills, safety procedures, technical knowledge, and paperwork, students will be expected to serve as an assistant stage manager or production stage manager on one (or both) Theater Program productions in their registered semester.
Offered: Fall
**ENG 297** STAGE MANAGEMENT: SPRING SEMESTER
In Stage Management I and/or II (fall/spring) will get an in-depth introduction to and immersion in stage managing a theatrical production. In addition, cover all areas of management skills, safety procedures, technical knowledge, and paperwork, students will be expected to serve as an assistant stage manager or production stage manager on one (or both) Theater Program productions in their registered semester.
Offered: Spring

**ENG 298** PERFORMANCE LAB: TBA
Credit—2 hours. Mandatory acting lab for students in ENG 291.
Offered: Fall

**ENG 299** PERFORMANCE LAB: TBA
Credit—2 hours. Mandatory acting lab for students in ENG 293.
Offered: Spring

**ENG 360** SPECIAL PROJECTS: THEATER
Can be offered either semester
Offered: Fall Spring

**ENG 375** SEMINAR IN WRITING: FICTION
Read short stories by contemporary writers along with fiction by the students in the workshop, and discuss ways writers can sharpen the conversation between text and reader. Also consider editing and reviewing techniques. Students expected to write and revise at least three original stories or three sections of a longer work of fiction.
Offered: Fall Spring

**ENG 376** ADV CREATIVE WRITING: POETRY
An advanced workshop in poetry. Students' poems are discussed weekly. Creative writing assignments are combined with brief essay responses to a selection of contemporary poetry books.
Offered: Fall Spring

**ENG 380** ADVANCED SEMINARS
Advanced seminars focus on a particular body of works (literary or cinematic), a special research topic, or a particular critical or theoretical issue. One or more extended critical essays will be required. Open to junior and senior English majors. Others may be admitted by permission of instructor.
Offered: Fall Spring

**ENG 385** HUMANITIES RESEARCH LAB
Offered: Fall Spring

**ENG 390** SUPERVISED TEACHING
Offered: Fall Spring

**ENG 391** INDEPENDENT STUDY
A course of reading, research, and writing on topics not covered by the existing curriculum, developed between the student and a faculty advisor.
Offered: Fall Spring

**ENG 391W** INDEPENDENT STUDY
A course of reading, research, and writing on topics not covered by the existing curriculum, developed between the student and a faculty advisor.
Offered: Fall Spring
ENG 392 PRACTICUM  
Offered: Fall Spring

ENG 393 SENIOR PROJECT  
Offered: Fall Spring

ENG 394 INTERNSHIPS IN ENGLISH  
Offered: Fall Spring

ENG 395 HONORS SEMINAR  

ENG 396 HONORS SEMINAR  
Special seminar for senior majors accepted into the English Honors Program. Topics vary each year.  
Offered: Fall Spring

ENG 398 THEATER INTERNSHIP: PUBLIC RELATIONS & MARKETING  
Qualified undergraduates may enroll in advanced seminars at the 400 level by permission of the Director of Undergraduate Studies and the Director of Graduate Studies in English and the instructor. Limited to students completing the English Honors Program.  
Offered: Fall Spring

ENG 400 HISTORY OF ENGLISH LANGUAGE  
The development of the English language from the Anglo Saxon period on up, focusing on texts from representative periods.  
Offered: Fall Spring

ENG 400M HISTORY OF ENGLISH LANGUAGE

ENG 401 OLD ENGLISH LANGUAGE & LITERATURE  
Literature written in England before the Norman Conquest. Latin works are read in translation; vernacular works, in the original.  
Offered: Fall Spring

ENG 401M OLD ENGLISH LITERATURE & LANG

ENG 402 MIDDLE ENGLISH LITERATURE  
Poetry, prose, and drama of the thirteenth, fourteenth, and fifteenth centuries, exclusive of Chaucer. Readings in Middle English.  
Offered: Fall Spring

ENG 402M BEOWULF'S STEPCODELDER

ENG 403 MEDIEVAL DRAMA  
English drama from its beginnings until 1580, including material from the mystery cycles, moralities, and early Tudor drama.  
Offered: Fall Spring

ENG 404 CHAUCER  
The principal works of Chaucer, in their historical and intellectual context. Readings in Middle English.  
Offered: Fall Spring

ENG 404M CHAUCER

ENG 405 MYSTICAL LITERATURE
ENG 405M MYSTICAL LITERATURE

ENG 406 STUDIES IN MEDIEVAL LITERATURE
Varying topics relating to the literature and culture of the Middle Ages.
Offered: Fall Spring

ENG 406M MEDIEVAL CELTIC STUDIES

ENG 407 ENGLISH RENAISSANCE LITERATURE
Sixteenth-century literature from Sir Thomas More to Spenser, with some attention to the continental background.
Offered: Fall Spring

ENG 408 RENAISSANCE DRAMA
English Renaissance drama through 1642, exclusive of Shakespeare.
Offered: Fall Spring

ENG 408M RENAISSANCE DRAMA

ENG 410 SHAKESPEARE
Readings of a selection of Shakespeare's plays.
Offered: Fall Spring

ENG 410M SHAKESPEARE

ENG 411 MILTON
The works of Milton in their historical and intellectual context.
Offered: Fall Spring

ENG 411M MILTON

ENG 413 STUDIES IN RENAISSANCE LITERATURE
Varying topics relating to the literature and culture of the Renaissance and Early Modern periods.
Offered: Fall Spring

ENG 413M ARCH,PHOTO,MODERNISM/POMO

ENG 415 EARLY BRITISH NOVEL
The novel from its beginnings to the early nineteenth century, emphasizing such novelists as Defoe, Fielding, Richardson, and Austen.
Offered: Fall Spring

ENG 415M THE EARLY ENGLISH NOVEL

ENG 417 STUDIES IN EIGHTEENTH-CENTURY LITERATURE
Varying topics relating to the literature and culture of England in the period from roughly 1660 to 1800.
Offered: Fall Spring

ENG 417M RESTORATION & 18TH-C DRAMA

ENG 419M TOURIST JAPAN
ENG 420 ROMANTIC LITERATURE
Major writers, other than novelists, of the early nineteenth century, with particular emphasis on poets from Blake through Keats.
Offered: Fall Spring

ENG 420M BRITISH ROMANTIC LITERATURE

ENG 421 VICTORIAN LITERATURE
The major intellectual, cultural, and artistic developments of the Victorian period, in prose, drama, verse, and related arts.
Offered: Fall Spring

ENG 421M VICTORIAN LITERATURE

ENG 422 NINETEENTH-CENTURY BRITISH NOVEL
Emphasizing such novelists as Dickens, Thackeray, Eliot, and Hardy.
Offered: Fall Spring

ENG 422M NINETEENTH-CENTURY NOVEL

ENG 423 STUDIES IN NINETEENTH-CENTURY LITERATURE
Varying topics relating to the literature and culture of England in the nineteenth century.
Offered: Fall Spring

ENG 423M MADNESS, MARRIAGE & MONSTROSITY

ENG 427 AMERICAN MODERNS
From 1913 to 1941, including Eliot, Stevens, Cather, Faulkner, Hemingway, Fitzgerald, O'Neill, W. C. Williams, and others.
Offered: Fall Spring

ENG 427M AMERICAN MODERNS

ENG 428 AFRICAN-AMERICAN DRAMA
Study of dramatic works by African-American playwrights during the twentieth and twenty-first century.
Offered: Fall Spring

ENG 428M THE HARLEM RENAISSANCE

ENG 429 AMERICAN FICTION SINCE 1980

ENG 429M AMERICAN FICTION SINCE 1980

ENG 430 STUDIES IN AMERICAN LITERATURE
Varying topics relating to the literature and culture of the Americas.
Offered: Fall Spring

ENG 430M HAWTHORNE AND MELVILLE

ENG 431 TWENTIETH-CENTURY BRITISH NOVEL
The novel from 1900 to the present, emphasizing such novelists as Conrad, Joyce, Woolf, and Lawrence.
Offered: Fall Spring

ENG 431M 20TH CENTURY BRITISH NOVEL
ENG 433 MODERN POETRY
An introduction to representative twentieth-century poetry.
Offered: Fall Spring

ENG 433M MODERN POETRY

ENG 434 MODERN FICTION
Great modern drama from Ibsen to Ionesco as a reflector of the main currents in modern thought and feeling.
Offered: Fall Spring

ENG 434M MODERN FICTION

ENG 436 CONTEMPORARY FICTION
Examines novels and short fiction by contemporary English and American writers.
Offered: Fall Spring Summer

ENG 436M CONTEMPORARY POETRY

ENG 437 CONTEMPORARY POETRY
Poetry in English from around 1945 to the present, emphasizing latter-day transformations of the visions and style of High Modernism.
Offered: Fall Spring

ENG 437M CONTEMPORARY POETRY

ENG 438 STUDIES IN MODERN & CONTEMPORARY LITERATURE
Varying topics relating to the literature – prose, poetry, and drama – of the later twentieth and twenty-first centuries.
Offered: Fall Spring Summer

ENG 438M THE GREAT WAR REVISITED

ENG 440 LITERARY CRITICISM AND THEORY
Study of the methods and conceptual backgrounds of the theoretical study of literature and literary analysis.
Offered: Fall Spring

ENG 440M AESTHETICS

ENG 442 TOPICS IN LITERATURE
Readings vary according to subject.
Offered: Fall Spring

ENG 442M AUTHORS, EDITORS & LIT MARKET

ENG 443 STUDIES IN A MAJOR AUTHOR
Intensive study of the writings of a single author or small group of authors from British or American literary traditions.
Offered: Fall Spring

ENG 443M RENAISSANCE LOVE POETRY

ENG 444 STUDIES IN A LITERARY TRADITION
A study of a body of works of literature seen through their particular links to a tradition or historical genre.
Offered: Fall Spring

**ENG 444M POETRY AND MEMORY**

**ENG 445 STUDIES IN LITERARY MODE**
Readings vary according to subject.
Offered: Fall Spring

**ENG 445M THE OUTSIDER IN LITERATURE**

**ENG 447 SCIENCE FICTION**
Examines a range of science fiction texts and issues, including works by Mary Shelley, H. G. Wells, Isaac Asimov, Robert Heinlein, Samuel R. Delany, and more.
Offered: Fall Spring

**ENG 447M SCIENCE FICTION**

**ENG 449 GENDER, WRITING, AND REPRESENTATION**
Offered: Fall Spring Summer

**ENG 449M GENDER & LANG LIT FILM & SOC**

**ENG 450 LITERATURE AND ETHNICITY**
Offered: Fall Spring

**ENG 450M RACE IN AMERICAN FICTION**

**ENG 452 THEATER IN ENGLAND**
This four-credit intersession course is conducted in London, UK, from late December through early January. We will see, discuss, and write on 16 to 18 plays. The itinerary this year will include world premieres of plays by Alan Bennett, John Logan, Lee Hall, and David Hare; Shakespeare's Twelfth Night, Tennessee Williams's Cat on a Hot Tin Roof, John Guerre's Six Degrees of Separation, Tom Stoppard and Andre Previn's Every Good Boy Deserves a Favour, several musicals, and splendid extravaganzas from the National Theatre such as War Horse and Nation, to name a few. The fee for the course is $2550.
Offered: Fall Spring

**ENG 452M THEATER IN ENGLAND**

**ENG 454 ARTHURIAN LITERATURE**
The origins and later developments of the chivalric romance tradition centering on the legends of King Arthur and his knights.
Offered: Fall Spring

**ENG 454M ARTHURIAN TRADITIONS**

**ENG 455 INTRODUCTION TO FILM HISTORY: SILENT CINEMA**
Intro to history, technology, cultural significance of motion pictures of the "pre-sound" era, screenings of 35mm prints accompanied by live music in the Dryden Theatre. Special attention to major pioneers, Dickson, Porter, Lumière, Méliès, and Griffith, including a variety of internationally produced films selected from the world-famous archival film collection of the George Eastman House. Discussions of origins, development of the motion picture industry and its leading genres up to the general introduction of movies with pre-recorded music, sound and dialog, beginning in 1927. Broad issues relating to the transformation of American and world popular entertainment forms and traditions, in relation to the established performing arts of the period. Relevant connections to preserving the world's film heritage will be highlighted and the film restoration facilities of the Motion Picture Department will be visited.
Offered: Fall Spring

ENG 455M FILM HISTORY: EARLY CINEMA

ENG 456 FILM HISTORY: 1929-1959
A transnational survey of film history, examining the technical and formal aspects of the medium in its production and exhibition. As we explore the development of cinema, we will address aesthetic and technological issues, i.e. how did the development of sound technology affect film form? How did it affect cross-cultural cinematic exchange? What is the significance of genre across various film traditions? What did the studio system contribute to Hollywood's success in the international market? How did immigrant and exiled film personnel shape the industries they joined? Weekly screenings and film journals required.

Offered: Fall Spring

ENG 456M FILM HISTORY: 1929-1959

ENG 457 FILM HISTORY: 1959-1989
This course will explore the developments in world cinema—industrial, technological, social, and political—in the second half of the sound period (1959 to the present).

Offered: Fall Spring

ENG 457M FILM HISTORY: 1959-1989

ENG 458 FILM ANALYSIS
not taught anymore.

ENG 458M FILM AS OBJECT

ENG 459 POPULAR FILM GENRES
An intensive study of selected types of popular films in their larger cultural context. Same as FMS 251.

Offered: Fall Spring

ENG 459M POPULAR FILM GENRES: FILM NOIR

ENG 460 STUDIES IN FILM HISTORY
This course may approach a national cinema, a director, a movement, or a genre with an emphasis on period or historical context.

Offered: Fall Spring

ENG 460M FILM HISTORY: 1989-PRESENT

ENG 461 FILM THEORY
An introduction to the history, the theory, and especially the practice of criticism. Same as FMS 255.

Offered: Fall Spring

ENG 461M CLASSICAL FILM THEORY

ENG 462 STUDIES IN A INTERNATIONAL CINEMA
Films from a particular international cinema—British, Japanese, German, French, Italian, and others from various periods. Same as FMS 256.

Offered: Fall Spring

ENG 462M CONTEMPORARY FRENCH FILM
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ENG 463</td>
<td>MEDIA STUDIES</td>
<td>Addresses the history and theory of a range of communications media and visual technologies in science, industry, and popular culture. Offered: Fall Spring</td>
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<td>ENG 463M</td>
<td>CLOCKS AND COMPUTERS</td>
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<tr>
<td>ENG 464</td>
<td>FILMS OF THE 1930S</td>
<td>A course in the works and career of an outstanding and identifiable film director: Hitchcock, Warhol, Huston, Buñuel, Renoir, etc. Offered: Fall Spring Summer</td>
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<td>ENG 464M</td>
<td>FILMS OF</td>
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<td>ENG 465</td>
<td>ISSUES IN FILM</td>
<td>The course takes up particular concepts, ideas, and ideology in film, often spanning periods, nations, and genres. Same as FMS 252. Offered: Fall Spring</td>
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<tr>
<td>ENG 465M</td>
<td>RACE &amp; GENDER IN POP FILM</td>
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<tr>
<td>ENG 467</td>
<td>TOPICS IN MEDIA STUDIES</td>
<td>Same as FMS 259. Offered: Fall Spring</td>
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<td>ENG 467M</td>
<td>CHANGING GENRES OF EROTICA</td>
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<td>ENG 468</td>
<td>FILM: THE MATTER WITH MEN</td>
<td>Same as FMS 254. Offered: Fall Spring</td>
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<tr>
<td>ENG 468M</td>
<td>FILM: THE MATTER WITH MEN</td>
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<tr>
<td>ENG 469</td>
<td>MUSEUM PRACTICE</td>
<td>Restricted to Selznick Students Offered: Fall Spring</td>
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<tr>
<td>ENG 469M</td>
<td>ADDITIONAL MUSEUM PRACTICE</td>
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<tr>
<td>ENG 470</td>
<td>CURATORIAL THEORY &amp; PRACTICE</td>
<td>Restricted to Selznick Students Offered: Fall Spring</td>
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<tr>
<td>ENG 471</td>
<td>FILM CONSERVATION &amp; RESTORATION</td>
<td>Restricted to Selznick Students Offered: Fall Spring</td>
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<tr>
<td>ENG 472</td>
<td>MOVING IMAGE ARCHIVE MANAGEMENT</td>
<td>Restricted to Selznick Students Offered: Fall Spring</td>
</tr>
</tbody>
</table>
ENG 473 LABORATORY WORK
Restricted to Selznick Students
Offered: Fall Spring

ENG 474 PERSONAL PROJECT
Restricted to Selznick Students
Offered: Fall Spring

ENG 474M ADDITIONAL PERSONAL PROJECT

ENG 475 ADV CREATIVE WRITING: FICTION
Seminar in fiction writing. Emphasis on individual development of style.
Offered: Fall Spring

ENG 475M ADV CREATIVE WRITING: FICTION

ENG 476 ADV CREATIVE WRITING: POETRY
After reading a wide variety of poems in different forms, students will write metered poems, rhymed poems, free-verse poems, and several more elaborately patterned poems (sestinas, villanelles, pantoums). They will also be asked to revise these poems substantially. The goal of the course is simply to become a better writer by recognizing that the beauty and power of all linguistic utterance is driven by its form.
Offered: Fall Spring

ENG 476M ADV CREATIVE WRITING: POETRY

ENG 477 SCREENWRITING WORKSHOP
The primary text for this course is students' own scripts in progress. The course also examines various professional scripts, both film and television.
Offered: Fall Spring

ENG 477M SCREENWRITING WORKSHOP

ENG 478 ADVANCED PLAYWRITING

ENG 478M ADVANCED PLAYWRITING

ENG 480 ADVANCED SEMINAR
Advanced seminars focus on a particular body of works (literary or cinematic), a special research topic, or a particular critical or theoretical issue. One or more extended critical essays will be required. Open to junior and senior English majors. Others may be admitted by permission of instructor.
Offered: Fall Spring

ENG 480M SLAVERY & 20THC AFRICAN-AM NOVEL

ENG 481M ART & THE CITY: NY 70'S

ENG 482 HUMOR WRITING

ENG 482M HUMOR WRITING

ENG 483 MEDIA ABC: THE DIGITAL PAGE
Provides a historical and critical introduction to the idea of medium and media, including books, paint, electronic files, music, photography, etc. 
Offered: Fall Spring

**ENG 484 ORALITY, LANGUAGE & LITERACY**
An inquiry into how literacy capability at different historical moments has affected the uses of texts, performances, and speech genres. Attention is given to literary, sacred, and secular texts. 
Offered: Fall Spring

**ENG 484M ORALITY, LANGUAGE & LITERACY**

**ENG 485 HUMANITIES RESEARCH LAB**
Offered: Fall Spring

**ENG 487 STUDIES IN TRANSLATION**
A study of the theoretical backgrounds, practical challenges, and creative activity of literary translation. 
Offered: Fall Spring

**ENG 487M STUDIES IN TRANSLATION**

**ENG 491 MASTER'S READING COURSE**
Credit to be arranged. 
Offered: Fall Spring

**ENG 495 MASTER'S RESEARCH**
Offered: Fall Spring

**ENG 500 GRADUATE COLLOQUIUM**
Introduction to Graduate Studies in English is a semester-long introduction to doctoral study in English. 
Offered: Fall Spring

**ENG 507 MIDDLE ENGLISH LITERATURE**
Poetry, prose, and drama of the thirteenth, fourteenth, and fifteenth centuries, exclusive of Chaucer. Readings in Middle English. 
Offered: Fall Spring

**ENG 508 MEDIEVAL LITERARY MODES**
Readings vary according to subject. 
Offered: Fall Spring

**ENG 510 SHAKESPEARE**
Expore the full range of Shakespeare's theater, including history plays, comedy, tragedy, and romance. 
Offered: Fall Spring Summer

**ENG 516 ELIZABETHAN AND JACOBEAN DRAMA**
This course may focus on drama written by Shakespeare's contemporaries. Become familiar with descriptions of 16th- & early 17th-C theatrical spaces. Sort through the plays' depiction of the proper relations between ruler and subject, husband and wife, parents and children, and European and non-European characters. Applicable English Cluster: Plays, Playwrights, and Theater. 
Offered: Fall Spring

**ENG 519M MATERIAL CULTURE**
ENG 524 RESTORATION & EIGHTEENTH-CENTURY LITERATURE
Offered: Fall Spring

ENG 525 THE EARLY ENGLISH NOVEL

ENG 529 ENGLISH ROMANTICISM
Major writers, other than novelists, of the early nineteenth century, with particular emphasis on poets from Blake through Keats.
Offered: Fall Spring

ENG 538 STUDIES IN EARLY AMERICAN LITERATURE
We will consider a broad range of American writing from this period, from the jeremiads of English Puritan reformers to the literature of the American revolution.
Offered: Fall Spring Summer

ENG 539 STUDIES IN NINETEENTH-CENTURY AMERICAN LIT I
Offered: Fall Spring Summer

ENG 540 STUDIES IN NINETEENTH-CENTURY AMERICAN LITERATURE II
Offered: Fall Spring

ENG 541 RHETORIC OF THE FRAME
Offered: Fall Spring

ENG 549 WWI & THE CULTURE OF MEMORY
The novel from 1900 to the present, emphasizing such novelists as Conrad, Joyce, Woolf, and Lawrence.
Offered: Fall Spring Summer

ENG 550 MODERN POETRY
Examine the rise of the poetic series (as opposed to the poetic sequence) in modernist writing.
Offered: Fall Spring

ENG 551 CRITICISM
This seminar studies the developments in literary theory over the past eighty years. Early in the twentieth century criticism and theory followed the success of science, trying to bring order and method to the subject.
Offered: Fall Spring

ENG 552 PROBLEMS IN CONTEMPORARY THEORY
Offered: Fall Spring

ENG 555 ISSUES IN FILM HISTORY & THEORY
Offered: Fall Spring

ENG 557 SPECIAL LITERARY PROBLEMS
Offered: Fall Spring

ENG 560 STUDIES IN RHETORIC & LITERACY
Offered: Fall Spring Summer

ENG 570 STUDIES 20THC LIT: INTL. FICT
ENG 571 WRITING PEDAGOGY
Issues on rhetoric, composition, literacy, and cultural studies that focus on the teaching of writing. We examine a significant range of theory and research on teaching and academic writing.
Offered: Fall Spring

ENG 572 PRACTICUM IN TEACHING OF WRITING
Credit—two hours
Offered: Fall Spring

ENG 585 HUMANITIES RESEARCH LAB
Offered: Fall Spring

ENG 591 PHD READINGS
Credit to be arranged.
Offered: Fall Spring

ENG 592 HISTORICAL & CONCEPTUAL FIELDS
Offered: Fall Spring

ENG 595 PHD RESEARCH
Credit to be arranged. The following courses may be taken for four hours of graduate credit.
Offered: Fall Spring

ENG 595A PHD RESEARCH IN ABSENTIA
Offered: Fall Spring

ENG 895 CONT OF MASTER'S ENROLLMENT
Offered: Fall Spring

ENG 897 MASTERS DISSERTATION
Offered: Fall Spring

ENG 899 MASTER'S DISSERTATION
Offered: Fall Spring

ENG 899A MASTERS DISSERTATION ABSENTIA
Offered: Fall Spring

ENG 985 LEAVE OF ABSENCE
Offered: Fall Spring Summer Winter

ENG 986V FULL TIME VISITING STUDENT

ENG 995 CONT OF DOCTORAL ENROLLMENT
Offered: Fall Spring

ENG 997 DOCTORAL DISSERTATION
Offered: Fall Spring

ENG 997A DOCTORAL DISSERTATION ABSENTIA
ENG 999 DOCTORAL DISSERTATION
Offered: Fall Spring

ENG 999A DOCT DISSERTATN IN ABSENTIA
Offered: Fall Spring

ENG 999B PHD IN-ABSENTIA ABROAD

ERG 120 FUN WITH MICROELECTRONICS

ERG 413 ENGINEERING OF SOFT MATTER

ERG 430 ORGANIC ELECTRONICS
Offered: Spring

ERG 441 ADV TRANSPORT PHENOMENON
This course will acquaint the student with important topics in advanced transport phenomena (momentum, heat and mass transport). Topics include laminar and turbulent flow, thermal conductivity and the energy equation, molecular mass transport and diffusion with heterogeneous and homogeneous chemical reactions. Focus will be to develop physical understanding of principles discussed and with emphasis on chemical engineering applications. In addition to the text, the student will be exposed to classic and current literature in the field.
Offered: Fall

ERG 454 INTERFACIAL ENGINEERING

ERG 458 ELECTROCHEM&ENGG & FUEL CELL
The course will concentrate on presenting the principles of electrochemistry and electrochemical engineering, and the design considerations for the development of fuel cells capable of satisfying the projected performance of an electric car. The course is expected to prepare you for the challenges of energy conversion and storage and the environment in the 21st century. Course is offered October 24 - December 12.
Offered: Fall

ERG 460 SOLAR CELLS
This course will introduce students to the basics of photovoltaic devices: physics of semiconductors; pn junctions; Schottky barriers; processes governing carrier generation, transport and recombination; analysis of solar cell efficiency; crystalline and thin-film solar cells, tandem structures, dye-sensitized and organic solar cells. Students will learn about current photovoltaic technologies including manufacturing processes, and also the economics of solar cells as an alternative energy source. Critical analysis of recent advances and key publications will be a part of the course work.
Offered: Fall

ERG 464 BIOFUELS
This course will provide the student with a grounding in the fundamental principles of biofuels, including their sources, properties, and the biological and chemical processes by which they are made.
Offered: Fall

ERG 465 BIOMASS CONVERSION
Elements of sustainable chemical processes. Generation of transportation fuels and chemical platforms from renewable resources—e.g. lignocellulose, algae, and carbon dioxide—for production of bulk and fine chemicals traditionally derived from petroleum. Use of environmentally benign solvents—e.g. ionic liquids, supercritical carbon dioxide, fluorous solvents, and liquid polymer—for reactions and separations. Chemical reactions activated by unconventional means—e.g. ball milling, microwave heating, and ultrasound irradiation—requiring minimum energy, catalyst, and solvent. Chemical and enzymatic catalysis enhanced by process integration to minimize the need for product separation and purification. “Click reactions” applied to the synthesis of peptides and advanced materials. Microreactor technologies to maximize heat & mass transfer, reaction rate, product yield and selectivity, in addition to facilitating process control, optimization, and scale-up.

Offered: Spring

**ERG 469** BIOTECHNOLOGY & BIOENGINEERING

**ERG 472** ENERGY SYSTEM ECON & MODELING

**ERG 482** PROC MICROELEC DEVICE

**ERG 485** THERMODYNAMICS & STAT MECH

**ERG 486** POLYMER SCIENCE & ENGINEERING

Mechanisms and kinetics of polymerization reactions; solution, suspension, and emulsion polymerization processes; thermodynamics of polymer solutions; the Flory-Huggins theory; principles and practice of membrane osmometry, light scattering, viscometry, and size exclusion chromatography; polymer rheology and mechanical properties; polymer morphology and phase transitions.

Offered: Fall

**ERG 488** INTRO TO ENERGY SYSTEMS

**ERG 491** MASTER'S READING IN ERG

**ERG 494** MASTERS INTERNSHIP

**ERG 495** MASTER'S RESEARCH

**ERG 496** RESEARCH SEMINAR

**ERG 497** TEACHING ALT ENERGY

**ERG 897** MASTER'S DISSERTATION

**ERG 899** MASTER'S DISSERTATION

**ERG 899A** MSTRS DISSERTATN IN ABSENTIA

**FMS 103** WAYS OF SEEING: SILHOUETTES

**FMS 104** EUROPEAN AVANT-GARDE CINEMA

**FMS 105** WOMEN'S PERSONAL CINEMA

**FMS 131** INTRODUCTION TO MEDIA STUDIES

This course provides a broad overview and introduction to media. We will cover histories of different types of media (internet, radio, audio recordings, television, cable, film, journalism, magazines, advertising, public relations, etc.) as well as various theories and approaches to studying media. No prior knowledge is necessary, but a real interest and willingness to explore a variety of media will come in handy. Occasional outside screenings will be required (but if you cannot attend the scheduled
screenings, you may watch the films on your own time through the Multimedia Center reserves.) Students will be evaluated based on assigned writing, classroom discussion leading, participation, short quizzes, midterm exam and final exam.

Offered: Fall

**FMS 132 INTRODUCTION TO THE ART OF FILM**
As an introduction to the art of film, this course will present the concepts of film form, film aesthetics, and film style, while remaining attentive to the various ways in which cinema also involves an interaction with audiences and larger social structures.

Offered: Spring

**FMS 161 INTRODUCTION TO VIDEO ART**
This course introduces the basic aesthetic and technical elements of video production. Emphasis is on the creative use and understanding of the video medium while learning to use the video camera, video editing processes and the fundamental procedures of planning video projects. Strategies for the use of video as an art-making tool will be explored. Works by artists and directors critically exploring media of film and video will be viewed and discussed. Video techniques will be studied through screenings, group discussions, readings, practice sessions and presentations of original video projects made during the course.

Declared FMS and Studio Art (SA) major are given priority registration, followed by FMS and SA minors. For questions on registration for this course, contact Juliet Carello at juliet.carello@rochester.edu

Offered: Fall Spring

**FMS 201 AMERICAN INDEPENDENT CINEMA**

**FMS 202 LANGUAGE & ADVERTISING**
The course examines the use advertisers make of language in selling their products and how it affects our perceptions of the product and ourselves. The emphasis in the course is on learning about the structure of language and how we can use it as a guide to observing and understanding the effectiveness of commercial messages.

Offered: Spring

**FMS 203 BROADCASTING IN THE DIGITAL AGE**
A descriptive and critical analysis of the nature of electronic mass media, broadcast practices and impact. Historical development of mass media institutions and role of media in society, including evaluation of news, government regulation, economics, emerging technologies, and audience dynamics, as well as decision-making and organizational aspects of the broadcast industry. Designed to provide a broad, rigorous orientation for understanding basic elements of media production as well as skills training in reporting, writing, editing, delivery and production of broadcast media. Enrollment limited to 20.

Offered: Spring

**FMS 204 COWBOYS & INDIANS**

**FMS 205 INTRODUCTION TO DIGITAL ART**
For the purpose of this course, the computer and software will be a medium of artistic production. Students will use writings, and readings on contemporary art practice and theory to create work within the framework of contemporary digital art. Software, namely Adobe PhotoShop and Macromedia Dreamweaver, will be the medium for materializing conceptual ideas. Prior experience with the software used in this course is not required. Studio Art supplies fee: $50. Enrollment limited at 10.

Offered: Fall Spring

**FMS 209 HOLOCAUST IN FILM & LIT**
How does one represent the unrepresentable? This is the key question we will explore as we look at films and literature about the Holocaust. As we look at fictional films, novels, documentaries and memoirs, we will discuss topics including memory, trauma, truth and representation. This course offers a look at the ways in which artists and their audiences negotiate the themes of loss, horror and redemption within the context of the Holocaust and its aftermath.

Offered: Spring

**FMS 211 ADVANCED DIGITAL ART**
FMS 213 RACE & GENDER IN POPULAR FILM
This course explores Hollywood's fascination with race and gender as social issues and as spectacles. In particular, we will focus on the ways that social difference have become the sites of conflicted narrative and visual interactions in our films. To examine competing representations of racial difference and sexual difference in US culture, we analyze popular films from the 1950's to the present.
Offered: Fall

FMS 215 FAMILY REPRESSION & RAGE IN FILM
The course aims to understand the social psychology of modern and contemporary Western/American family experience, and especially its means of abetting the concealment, repression, and suppression of people's emotional lives. Study of the films combined with the readings seek to develop critical understanding of the nuclear family (and versions of it) and the conditions it may create for child-rape, racism, homophobia, murder and self-destructive behavior such as substance abuse, self-mutilation, and suicide. Sometimes the violence is arbitrary, sometimes it is inevitable, sometimes it is incomprehensible. In each case the course's attention is on the personal and collective machineries of repression, the resulting rage in many individuals, and the frequent (and now often familiar)violent results. Readings in the course include works by Erik Erikson, Nancy Chodorow, Alice Miller, and Stephanie Coontz.
Offered: Spring

FMS 219 BAD DEVICES

FMS 222 ART & THE CITY: NY IN THE 70S
The recession & fiscal crisis of the 1970s was paradoxically a highly productive period of artistic experimentation in New York City. In the wake of the transforming art movements of the 1960s--Pop, Minimalism, and Conceptual Art--the 1970s saw the invention of new and hybrid media: video art, performance art, & site-specific installation works. By the end of the decade a new group of artists that came to be known as the Pictures Generation began showing in alternative spaces such as Artists Space. In this seminar we will study how the de-industrialization of New York contributed to new kinds of art making & examine how art works take the city as their subject. Among the artists we will consider are Bernd & Hilla Becher, Gordon Matta-Clark, Joan Jonas, Peter Hujar, Danny Lyon, Cindy Sherman, and Thomas Struth. Avant-garde film also took the city as its subject; the course will include the work such film & video-makers as Dara Birnbaum, Ernie Gehr, Peter Hutton, Babette Mangotle, and Charles Simonds.
Offered: Fall

FMS 223 DANCE ON CAMERA/CAMERA DANCE
This course introduces students to the study of media from an anthropological perspective. We will examine constructions of media as objects of social scientific analysis, as both textual artifacts and social practice. Questions that guide the course are, What is “the media”? How have recent transformations in global capital and communications technology altered how we consume, analyze and produce media? What can the study of media tell us about social life & the imagination? We will seek to understand the medias role in producing national and transnational public spheres, focusing on a range of media formations, from multinational corporate structures to indigenous & diasporic productions, to question media's power to shape subjectivities & conceptions of cultural difference. We will examine print journalism, television, film, radio, advertising, and visual art in both local & global contexts. Students will be encouraged to incorporate media analysis and media production in their own ethnographic projects.
Offered: Fall

FMS 225 MEDIA ABC: THE DIGITAL PAGE
Media ABC is an introduction to the very idea of medium and media-as in “the medium of print.” The goal is to come to a basic understanding of that concept. The perspective of the course is historical and critical. The key assumption is that media-the human voice, film, electronic files--shape their "content"--words, pictures, sound- and their authors and their audiences. There have always been media because life cannot be lived without them.
Offered: Spring

FMS 226 DOCUMENTARY, MOCK DOCUMENTARY, REALITY TV
This course combines a survey of major historical movements and styles in documentary film with an examination of more recent trends and challenges to the tradition. So, in addition to studying the expository political documentary, ethnographic
film, and the direct cinema and cinéma vérité movements, we will explore forms including reality TV, mock documentary, and autobiographical film and video.

Offered: Spring

FMS 227 POETICS OF TELEVISION

FMS 229 GNDR & SEXUALITY AMERICAN CINEMA

FMS 231 CHANGING GENRES OF EROTICA

FMS 232 POPULAR FILM GENRE: THE HORROR FILM
This course examines major critical issues surrounding the horror genre, through close study of Classical Hollywood, post-Classical, and international horror films, and readings in critical theory. Issues to be explored include boundary transgression and bodily abjection in the construction of the horror monster; gender, pregnancy, and the monstrous feminine; social Otherness (race, class, sexuality) as monstrosity; the figure of the serial killer and the shift from classic to modern horror; the grotesque and the blending of comedy and horror in the zombie film; international horror (especially Japan) and cross-cultural influences with Hollywood. As a research seminar, the course will involve the development of a substantial research project.

Offered: Fall

FMS 233 SOCIAL USES OF MEDIA

FMS 237 POPULAR FILM GENRES: FILM NOIR

FMS 238 POPULAR FILM GENRES: GANGSTER FILMS
We will screen and study approximately 12 gangster and crime films from the rich genre of such movies. We will also read some related fiction and some critical studies of the form. We will look at films spanning the history of cinema from Little Caesar to The Godfather, examining the devices of the form, those elements that seem to define it, the relation of the subject to the culture, the meaning of the film, and so forth. The course will include lectures and discussion.

Offered: Spring

FMS 239 POPULAR FILM GENRES: VAMPIRE FILM
This course will attempt to cover the history, literature, and above all, the cinema of vampirism from the silent era through the present day. We will study a number of important examples of the form, read a couple of significant literary works about the vampire, especially Bram Stoker's novel "Dracula," and also employ one or two critical texts that deal with the vampire in cinema. Not open to freshmen. Applicable English Cluster: Modern and Contemporary Literature.

FMS 241 POLISH CINEMATOGRAPHY

FMS 242 ALL IS FAIR IN LOVE AND WAR
This course contests its title. There is language and literature/film that records how language has failed as a means of (human) species adaptation toward conflict resolution in domestic and international contexts. This course, following the observations of Virginia Woolf in Three Guineas (1939), tries to document the language/literary connections between domestic violence and war making. In domestic situations, violence is protected by traditions of privacy and male governance of households; in public situations, there has been an inertia throughout recorded history in enacting the ideal announced in Isaiah: "[nations] shall not learn war any more". In our own society genres of popular and elite culture teach the necessity and glory of war through literature, film, toys, sports, and ideals of heroic behavior. Our normal ways of speaking still presuppose violence and war as a "last resort" in solving domestic and international antagonisms.

Offered: Spring

FMS 243 FILM AS OBJECT
Film Studies involves the critical analysis of the pictorial and narrative qualities of motion pictures, film theory, and film history, understanding film as both industry and creative art. This course unconventionally focuses on the tangible object at the origin of the onscreen image, and what we can learn about the social, cultural and historical value of motion pictures and national film
cinemas through an understanding of Film as an organic element with a finite life cycle. Focus is on the photographic element, but includes a consideration of alternative capture media. Enrollment limited to 15.
Offered: Spring

FMS 244 TOP CONT ART & CRIT: WARHOL

FMS 245 AMERICAN MOVIES MOMENT

FMS 246 BRIGHT LIGHTS, BIG CITY
In the early twentieth century, our conceptualization of the city had a significant impact on how we understood our interactions with others and the notion of the individual. In this course we will look at a wide variety of texts including newspaper articles, essays, films and fiction to explore the following questions. What is the relationship between technology and man? How does the individual navigate the space of the city? What role do class and gender play in our ability to move through the city? What is the relationship between modernity and urban life?
Offered: Spring

FMS 247 FILM HISTORY: EARLY CINEMA
Introduction to the history, technology, and cultural significance of motion pictures of the "pre-sound" era, with screenings of 35mm prints accompanied by live music in the Dryden Theatre. Special attention will be paid to the major pioneers, Dickson, Porter, Lumière, Méliès, and Griffith, but the course will include a variety of internationally produced films selected from the world-famous archival film collection of the GEH. Discussion sessions will cover the origins and development of the motion picture industry and its leading genres up to the general introduction of movies with pre-recorded music, sound and dialog, beginning in 1927. Broad issues relating to the transformation of American and world popular entertainment forms and traditions, in relation to the established performing arts of the period, will also be covered. Relevant connections to preserving the world's film heritage will be highlighted and the film restoration facilities of the Motion Picture Department will be visited this course.
Offered: Fall

FMS 248 FILM HISTORY: 1929-1959
This course provides a transnational survey of film history, examining the technical and formal aspects of the medium in its production and exhibition. As we explore the development of cinema during this period, we will address a number of aesthetic and technological issues. For example, how did the development of sound technology affect film form? How did it affect cross-cultural cinematic exchange? What is the significance of genre across various film traditions? What did the studio system contribute to Hollywood's success in the international market? How did immigrant and exiled film personnel shape the industries they joined? Weekly screenings and film journals required.
Offered: Fall

FMS 249 FILM HISTORY: 1959-PRESENT
This course will explore developments in world cinema—industrial, technological, social, and political—from 1959 to the present. It will consider aesthetic and technical issues, including questions like the following. What brought about the collapse of the Hollywood studio system? What’s new about the French New Wave? What do we mean by “Third Cinema”? How do different national cinemas influence each other? Weekly screenings and film journals required.
Offered: Fall

FMS 250 FILM HISTORY: 1989-PRESENT

FMS 251 FILMS OF THE 1930S

FMS 255 FAASSBINDER

FMS 256A ADVANCED DIGITAL ART

FMS 256B ADVANCED DIGITAL ART
FMS 256C ADVANCED DIGITAL ART

FMS 257 ADVANCED VIDEO ART
In this advanced production course, video and sound will be considered as independent art forms as well as part of video installations. Students will produce experimental videos and sound pieces. They will also explore the use of these mediums when combined with two- and three-dimensional materials in real time. This course will cover both analogue and digital formats. Must have taken FMS 161/SA 161/ENG 161. Permission of instructor required. Studio arts supplies fee: $50.
Offered: Fall

FMS 259 THE DETECTIVE FILM

FMS 260 SCREENWRITING WORKSHOP
An introduction to the three-act film structure. Students will read and view numerous screenplays and films, and develop their own film treatment into a full-length script.
Offered: Spring

FMS 261 FILM ADAPTATIONS & LIT TEXTS

FMS 262 NEW AUSTRIAN CINEMA

FMS 263 AVATAR: DIGITAL ARTISTRY IN VIRTUAL WORLDS AND THEIR DEVELOPMENT
This course will examine the uses of Second Life and other virtual worlds to produce not just 3D artistic environments, but "machinima," film-clips using "avatars" as actors, with an emphasis on narrative and ultimately educational uses. Special attention given to the perceived pathos of the mechanical, the notions of the puppet and the android.
Offered: Fall

FMS 263A CREATE A DOCUMENTARY

FMS 263B CULTURE THROUGH VIDEO

FMS 265 GUILT

FMS 273 AKIRA KUROSAWA
An intensive study of the films of Akira Kurosawa, Japan’s most durable and visible auteur. Thanks to Kurosawa’s prolific output during his fifty-year career, from his debut in the 1940s to his recent work in the 1990s, an analysis of his films also offers the opportunity to examine some of the major cultural, political, and social issues and events that have left an imprint on the theory and production of film in Japan. We will also consider the work of many individuals (for example, the screenwriter Shinobu Hashimoto) who made important contributions to creating the Kurosawa opus, and whose careers are closely associated with Kurosawa. In addition to Kurosawa’s recent films, (screenings will include his well-known period films as well as less familiar contemporary dramas), students are responsible for assigned readings and are required to attend screenings.
Offered: Fall

FMS 274 LIT, MEDIA & MODERN ENVIRON

FMS 275 FOOD, MEDIA, LITERATURE

FMS 278 MEXICAN FILM
Visitors to Mexico already have Hollywood versions of the country in their heads, but the 'real' Mexico is a much more complex place. Archetypes of tough hombres, renegade outlaws, dark and sultry women, or beach bums lolling under the hot sun fall by the wayside when Mexican cinema introduces the grittier and much more varied realities of the contemporary nation. This course explores both historical antecedents and contemporary visions. It includes films by directors such as Spanish exile Luis Buñuel, Alejandro González Iñárritu, Jaime Humberto Hermosillo, Alfonso Cuárrón, Carlos Reygadas, Raúl Ruiz, Maria Novaro, and other box office favorites. From Robert Rodríguez's Bedhead, to Desperado, Once Upon a Time in Mexico and, of course, Y tu
mamá también, Entre Pancho Villa y una mujer desnuda, and La ley de Herodes we explore images of Mexican culture. Course taught in English but work may be written in Spanish for Spanish Credit.

Offered: Spring

FMS 279 REPRESENTING AFR-AMERICANS

FMS 280 FRENCH CINEMA: THE NEW WAVE

FMS 281 SPANISH FILM
Critical analysis of recent Spanish cinema within its cultural contexts. Beginning with the early post-Civil War period, focus is on film as the narrative representation of radical changes and transitions in Spanish society. Considers the translation of other media (literary, theatrical, etc.) into film and the problematic relationship between historical reality and the aesthetics of cinema.

FMS 282 ADV. DIG ART: ART OF REMIX

FMS 283 MIDDLE EASTERN CINEMA

FMS 284 HISTORY OF FRENCH CINEMA
The dawn of the age of movies coincided with the Russian Revolution, and film was Lenin’s favorite art form. The course surveys Russian film from the beginnings to the present. The course investigates the major role that cinema played in shaping the national and political identity of the Soviet Union, and looks at what was artistically interesting and popular about these films, some of whose directors, like Eisenstein and Tarkovsky, are among the world’s most influential filmmakers.

FMS 285 TOPICS IN ITALIAN CULTURE/ITALIAN CINEMA
This course provides a compendium of Italian cinema from the post-war period to the 1960s through the work of a few directors who have made Italian cinematography famous all over the world and have often been a source of inspiration for important foreign directors. By looking at these artists as primary contributors to the narrative and interpretation of the years following Mussolini’s dictatorship and the tragedy of World War II, the course aims at an understanding of the historical and social development of Italian society of the time and its quest for a definition of national identity. Themes addressed include: 1. From the Resistance to the new neorealist cinema. Definition of Neorealism; 2. Reconstruction and the restoration of the cinema system in the 1950s. Auteur cinema; 3. The modernity of the 1960’s. New cinema and commedia all’italiana. Filmmakers include: De Sica, Rossellini, Visconti, Fellini, Germi and others.

Offered: Spring

FMS 286 FRENCH CINEMA 1930-1960

FMS 288 CINEMA & REVOLUTION: THE WEST GERMAN AVANT-GARDE
This course explores the relationship between film and revolution in West German film from 1965 to the present.

Offered: Spring

FMS 289 INTRO TO EAST EURO FILM

FMS 290 DIGITAL CITYSCAPES
This course uses the films of the Third Reich to examine the parameters of Nazi culture. It examines such diverse aspects as the Leader Principle, gender roles, racial hygiene, anti-Semitism, mass culture, propaganda, and visions of history. Films are analyzed both in terms of their aesthetics as well as the social and historical context of their production.

FMS 291 CONTEMPORARY FRENCH FILM

FMS 293 FRENCH CINEMA: THE NEW WAVE
A study of French film from its beginnings through the New Wave.

FMS 294 ASIAN-AMERICAN LITERATURE & FILM
We focus on cinematic texts--short, documentary, and feature--and literary genres of Asian Pacific Islander American (APA) works from the 20th and 21st century--drama, fiction, poetry, memoir. Our APA literature includes works by Chinese American, Filipina American, Indian American, Korean American, Japanese American, and Vietnamese American authors, among others. We will analyze APA theories too, interrogating the construction of "America," myths and "foundational fictions." Students will lead discussion, write essays, and write short response papers.

Offered: Fall

FMS 296 CHINESE FILM

FMS 298 TOURIST JAPAN

“The Samurai” will examine the emergence of the warrior class in the 10th and 11th centuries, its evolution from rustic warriors to medieval military power holders, and military bureaucratic administrators. The class will include readings on the history, literature, philosophy, and religion of the samurai class. Films treating the popular imagery of the samurai will be projected in class. Various representations of the samurai will be compared and contrasted.

Offered: Fall

FMS 299 ATOMIC CREATURES: GODZILLA

A study of the phenomenon that generated and helped define the Japanese kaiju eiga (monster film) genre: the Godzilla series that began with the original film by Inoshiro Honda (Gojira, 1954), and its better-known US remake (Godzilla, King of the Monsters, 1956). The larger context of the course is a critical investigation of the science-fiction/horror/creature feature film generated in the late 1940's by the dawn of the nuclear age. The course will begin with a sampling of seminal non-Japanese titles that created a paradigm for the Godzilla film, and will address the historical and social contexts for the series erratic trajectory since 1954. Students are responsible for assigned readings and are required to attend screenings.

Offered: Fall

FMS 308 DANCE, ART AND FILM

This course explores relations among dance, art, and film at significant moments in the 20th and 21st centuries. We will study instances in which the forms are particularly closely aligned, including the famous productions by artists such as Goncharova, Picasso, and Matisse, for Diaghilev’s Ballets Russes; Martha Graham’s partnership with Isamu Noguchi; and Merce Cunningham’s work with Robert Rauschenberg. We will also look simply at how dance is filmed or how dance uses film. The course will concentrate on two figures of the postwar American avant-garde: Merce Cunningham and Yvonne Rainer. Cunningham’s dances choreographed for film in collaboration with film- and video-makers and Rainer’s move from choreography to filmmaking and eventually to hybrids of the two will constitute the core of the course.

Offered: Fall

FMS 355 FEMINIST FILM THEORY

Feminism has had a powerful impact on the developing field of film theory from the 1970s to the present. This course will examine the major feminist work on film, moving from the earlier text-based psychoanalytic theories of representation to theories of feminine spectatorship to studies of reception contexts and audience. We will also give some attention to the very important role of feminist theory in television studies. Weekly screenings, keyed to the readings, will allow us to test the value of these positions for close critical analysis of the film or television text. Readings to include: Laura Mulvey, Kaja Silverman, Constance Penley, Judith Mayne, Linda Williams, Jacqueline Bobo, Valerie Smith, Lynn Spigel, Lynne Joyrich, Julie D’Acci.

Offered: Spring

FMS 356 CLASSICAL FILM THEORY

This course examines the philosophical, aesthetic, and social issues that are central to classical film theory. It traces the historical development of film theory from 1900 to the 1950s. We will begin with thinkers in the period of early cinema, including Germaine Dulac, Jean and Marie Epstein, and then we will examine the development of film theory in the work of later theorists, such as Jean Mitry, Sergei Eisenstein, Dziga Vertov, Siegfried Kracauer, Walter Benjamin, Andre Bazin, and Christian Metz. Weekly screenings of historically contemporary films will allow us to examine the ongoing dialogue between the evolving medium and the developing theoretical discussion.

Offered: Spring
FMS 390 SUPERVISED TEACHING
Offered: Fall Spring

FMS 391 INDEPENDENT STUDY
Offered: Fall Spring

FMS 391W INDEPENDENT STUDY

FMS 392 SPECIAL TOPICS
Offered: Fall Spring

FMS 393 SENIOR PROJECT
Offered: Fall Spring

FMS 394 INTERNSHIP
Offered: Fall Spring

FMS 413 RACE & GENDER IN POPULAR FILM
This course explores Hollywood's fascination with race and gender as social issues and as spectacles. In particular, we will focus on the ways that social difference have become the sites of conflicted narrative and visual interactions in our films. To examine competing representations of racial difference and sexual difference in US culture, we analyze popular films from the 1950's to the present.
Offered: Fall

FMS 415 ISSUES FILM: FAMILY REPRSSION

FMS 422 ART & THE CITY: NY IN THE 70S
The recession & fiscal crisis of the 1970s was paradoxically a highly productive period of artistic experimentation in New York City. In the wake of the transforming art movements of the 1960s--Pop, Minimalism, and Conceptual Art--the 1970s saw the invention of new and hybrid media: video art, performance art, & site-specific installation works. By the end of the decade a new group of artists that came to be known as the Pictures Generation began showing in alternative spaces such as Artists Space. In this seminar we will study how the de-industrialization of New York contributed to new kinds of art making & examine how art works take the city as their subject. Among the artists we will consider are Bernd & Hilla Becher, Gordon Matta-Clark, Joan Jonas, Peter Hujar, Danny Lyon, Cindy Sherman, and Thomas Struth. Avant-garde film also took the city as its subject; the course will include the work such film & video-makers as Dara Birnbaum, Ernie Gehr, Peter Hutton, Babette Mangolte, and Charles Simonds.
Offered: Fall

FMS 426 ISSUES FILM: DOCUMTRY, MOCK

FMS 427 POETICS OF TELEVISION

FMS 433 SOCIAL USES OF MEDIA

FMS 438 POPULAR FILM: GANGSTER FILM

FMS 439 POPULAR FILM GENRES: VAMPIRE

FMS 443 FILM AS OBJECT

FMS 446 BRIGHT LIGHTS, BIG CITY
In the early twentieth century, our conceptualization of the city had a significant impact on how we understood our interactions with others and the notion of the individual. In this will look at a wide variety of texts including newspaper articles, essays,
films and fiction to explore the following questions. What is the relationship between technology and man? How does the individual navigate the space of the city? What role do class and gender play in our ability to move through the city? What is the relationship between modernity and urban life?

Offered: Spring

**FMS 448** FILM HISTORY: 1929-1959

**FMS 460** SCREENWRITING WORKSHOP

**FMS 463** CLOCKS AND COMPUTERS

**FMS 473** AKIRA KUROSAWA

An intensive study of the films of Akira Kurosawa, Japan’s most durable and visible auteur. Thanks to Kurosawa’s prolific output during his fifty-year career, from his debut in the 1940s to his recent work in the 1990s, an analysis of his films also offers the opportunity to examine some of the major cultural, political, and social issues and events that have left an imprint on the theory and production of film in Japan. We will also consider the work of many individuals (for example, the screenwriter Shinobu Hashimoto) who made important contributions to creating the Kurosawa opus, and whose careers are closely associated with Kurosawa.

Offered: Fall

**FMS 480** FRENCH CINEMA: THE NEW WAVE

**FMS 488** MOTHERS, COMRADES & WHORES

**FMS 490** HOLLYWOOD BEHIND THE WALL

**FMS 493** RUSSIA GOES TO THE MOVIES

**FMS 499** ATOMIC CREATURES: GODZILLA

A study of the phenomenon that generated and helped define the Japanese kaiju eiga (monster film) genre: the Godzilla series that began with the original film by Inoshiro Honda (Gojira, 1954), and its better-known US remake (Godzilla, King of the Monsters, 1956). The larger context of the course is a critical investigation of the science-fiction/horror/creature feature film generated in the late 1940's by the dawn of the nuclear age. The course will begin with a sampling of seminal non-Japanese titles that created a paradigm for the Godzilla film, and will address the historical and social contexts for the series erratic trajectory since 1954. Students are responsible for assigned readings and are required to attend screenings.

Offered: Fall

**FMS 508** DANCE, ART AND FILM

This course explores relations among dance, art, and film at significant moments in the 20th and 21st centuries. We will study instances in which the forms are particularly closely aligned, including the famous productions by artists such as Goncharova, Picasso, and Matisse, for Diaghilev’s Ballets Russes; Martha Graham’s partnership with Isamu Noguchi; and Merce Cunningham’s work with Robert Rauschenberg. We will also look simply at how dance is filmed or how dance uses film. The course will concentrate on two figures of the postwar American avant-garde: Merce Cunningham and Yvonne Rainer. Cunningham’s dances choreographed for film in collaboration with film- and video-makers and Rainer’s move from choreography to filmmaking and eventually to hybrids of the two will constitute the core of the course.

Offered: Fall

**FMS 555** FEMINIST FILM THEORY

Feminism has had a powerful impact on the developing field of film theory from the 1970s to the present. This course will examine the major feminist work on film, moving from the earlier text-based psychoanalytic theories of representation to theories of feminine spectatorship to studies of reception contexts and audience. We will also give some attention to the very important role of feminist theory in television studies. Weekly screenings, keyed to the readings, will allow us to test the value of these positions for close critical analysis of the film or television text. Readings to include: Laura Mulvey, Kaja Silverman, Constance Penley, Judith Mayne, Linda Williams, Jacqueline Bobo, Valerie Smith, Lynn Spigel, Lynne Joyrich, Julie D’Acci.
Offered: Spring

**FMS 556 CLASSICAL FILM THEORY**
This course examines the philosophical, aesthetic, and social issues that are central to classical film theory. It traces the historical development of film theory from 1900 to the 1950s. We will begin with thinkers in the period of early cinema, including Germaine Dulac, Jean and Marie Epstein, and then we will examine the development of film theory in the work of later theorists, such as Jean Mitry, Sergei Eisenstein, Dziga Vertov, Siegfried Kracauer, Walter Benjamin, Andre Bazin, and Christian Metz. Weekly screenings of historically contemporary films will allow us to examine the ongoing dialogue between the evolving medium and the developing theoretical discussion.

Offered: Spring

**FR 101 ELEMENTARY FRENCH I**
French 101 is an introductory language course. Students learn fundamentals of grammar, and pronunciation in the context of French culture. Emphasis is on developing communicating skills, principally speaking but also including listening, reading and writing. There is an obligatory recitation section twice a week in addition to the main class and the work in the multimedia center.

**FR 102 ELEMENTARY FRENCH II**
French 102 continues the work of the beginning course. There is an additional emphasis on reading comprehension and vocabulary building.

**FR 111 FRENCH IN FOCUS: INTENSIVE BEGINNING FRENCH**

**FR 153 INTERMEDIATE FRENCH**
Intermediate French. Development of oral and written skills through the exploration of specific topics and themes. Emphasis on grammatical forms and idioms.

**FR 155 FRENCH CONVERSATION & COMPOSITION**
The most advanced conversation and composition course aims to bring students to a level of proficiency with the spoken language, including its idiomatic forms, and to refine composition skills. Course materials include extensive use of popular French culture, including film.

**FR 157 FRENCH IN FRANCE**
French in France is a month-long conversation and culture course held in Rochester's Breton sister city, Rennes. Students meet in Paris for several days of orientation by University of Rochester program director and travel together to Rennes. Students are hosted by families who provide housing, meals, and opportunities for language and culture encounters. Excursions include the medieval abbey of Mont St. Michel, the old port of St. Malo, and the landing beaches of Normandy. The program fee includes language instruction, family stay, and excursions. Special application required.

**FR 160 THE NEW EUROPE**

**FR 161 EUROPE TODAY**

**FR 190 TEXTS BEYOND BORDERS**
The aim of this six-week course is to introduce students to contemporary French cinema and the basic structures of contemporary French society, while offering them the opportunity to sharpen their listening, speaking, and writing skills in French. Students will view a selection of eight to ten films to examine and discuss major cultural themes such as education, youth, immigration, the political system, work and social life in France. Daily preparation on assigned thematic and linguistic tasks; weekly written film review, and a final paper on topic of choice.

**FR 200 ADVANCED FRENCH**
Intensive practice in reading, writing, and speaking French, based on rigorous grammar review and on close readings of literary and cultural texts. Classroom work emphasizes grammar, speaking, reading and writing French.
**FR 202** INTRODUCTION TO LITERATURE IN FRENCH
This course is designed to provide students with intensive practice in reading French from a wide variety of sources. Texts drawn from literature, popular culture, journalism and other specialized fields will be read and discussed with an eye toward improving students' comprehension, developing their vocabulary, and expanding their interpretive and analytic capabilities.

**FR 204** CONTEMPORARY FRENCH CULTURE
This course is designed to provide students with a comprehensive view of French Contemporary culture through major trends of French cultural, political, and intellectual life in the recent years. While we cannot study factual representations of French culture, we will attempt to establish a conceptual framework that would help us in the understanding of complex questions such as What does it mean to be French?, What is France? What is French culture?, etc.

**FR 207** FRENCH IN FRANCE
French in France is a month-long conversation and culture course held in Rochester’s Breton sister city, Rennes. Students meet in Paris for several days of orientation by University of Rochester program director and travel together to Rennes. Students are hosted by families who provide housing, meals, and opportunities for language and culture encounters. Excursions include the medieval abbey of Mont St. Michel, the old port of St. Malo, and the landing beaches of Normandy. The program fee includes language instruction, family stay, and excursions. Special application required.

**FR 211** FRENCH GRAMMAR
Close analysis of selected texts, not so much for their content as for their grammatical interest. Discussion and practice of advanced topics; some attention to practical phonetics.

**FR 212** A COURSE IN FRENCH TRANSLATION
A Course in French Translation is intended for those who wish both to improve their comprehension of the written text and to interpret it at an appropriate stylistic level through translation into English. The course will be based on a great variety of texts, elementary to highly sophisticated, belles-lettres to scientific, selected both by the teacher and by the students. Some oral practice will be introduced as well. A basic reference work, combining grammar and texts, will be required.

**FR 230** FRENCH SOCIAL THOUGHT
This course examines the singular contribution of French thinkers to the development of the social sciences (or "sciences of man" as they are called in France) in the twentieth century, including Structuralism, Post-structuralism, Marxist Existentialism, and theories of religion and culture. We examine three of the most important works of French social theory: Claude Levi-Strauss's _The Elementary Structures of Kinship_ (1949), Jean-Paul Sartre's _Critique of Dialectical Reason_ (1960), and Rene Girard's _Things Hidden Since the Foundation of the World_ (1978). Other texts include Jacques Derrida's "Structure, Sign, and Play in the Discourse of the Human Sciences" (1966) and Jean-Luc Nancy's "The Deconstruction of Christianity" (1995).

**FR 232** HUGO'S "LES MISERABLES"
Examines one of the world’s most celebrated and influential novels, Victor Hugo’s "Les Misérables" (1862). Interprets Hugo’s work as a modern epic that assimilates the genres of the historical novel, the realist novel, and the popular novel. The vast and multifaceted canvas of Hugo’s masterwork will allow us to discuss issues of social justice, moral philosophy, religion, politics, history, the city of Paris, and love. We will also study some of the many screen adaptations that have been made of the book. Conducted in French.

**FR 233** REALISTS & ROMantics
Nineteenth-century French literature witnessed two competing literary currents; romanticism and realism. Romanticism, heir to the logic and reason of the French Enlightenment, sought to rescue from scientific systematization the wonder and awe of nature; realism attempted to describe the world exactly as it was. This course examines the confrontation of these two movements, and attempts to discern what made each distinct, as well as what features they may unwillingly have shared. Do realistic novels romanticize their subjects? What’s true to life in romantic descriptions of nature? How do aesthetic concerns become social or political ones? Readings include Constant, Chateaubriand, Flaubert, Rimbaud, Baudelaire, and Maupassant.

**FR 235** TEXTS BEYOND BORDERS

**FR 239** REPRESENTING AFRICAN-AMERICANS IN THE AFRICAN IMAGINATION
The dialogue among Africans, African-Americans, and other peoples of African descent rest on their common experiences of oppression, liberation, and cultural exchanges, experiences that have turned the Atlantic from a line of division into a dynamic bridge. This course seeks to critically investigate the shared destinies of African peoples and peoples of the African descent throughout the world. Thus, while acknowledging the centrality of the African-American experience within the Black Diaspora, this course argues that this centrality requires a critical investigation of the representation of Black America in the cultural productions of Africans, Haitians, Caribbeans and Black Europe. The Reading list include Maryse Condé, Lorraine Hansberry, Alice Walker, Paule Marshall, and Ngugi was Thiongo.

FR 241 LE NOUVEAU ROMAN
This course will focus on the experimental style of the French novel, labelled as the "nouveau roman" in the 1950s and 1960s. We will examine the literary tendencies that attempted to define anew the purpose of the novel, and will discuss and analyze novels and theoretical work by writers such as Marguerite Duras, Alain Robbe-Grillet, Nathalie Sarraute, and Michel Butor. The literary style of the nouveau roman emerged in dialogue with the film movement known as the French New Wave, and a number of films, such as Alain Resnais’ "Hiroshima, Mon amour" (1958), and "Last Year in Marienbad" (1961) will be included in class discussion and analysis. All readings and class discussions will be in French.

FR 247 BLACK PARIS
This course is a study of Black Paris, as imagined by three generations of Black cultural producers from the United States, the Caribbean and Africa. Paris is as a space of freedom and artistic glory that African American writers, soldiers and artists were denied back home. For colonized fricans, and Antilleans, Paris was the birthace of the Negritude, the cultural renaissance informed by the dreams and teachings of the Harlem Renaissance. Black Paris, for the young generations caught in the marginal space of poor suburbs, calls to mind images of burning cars, riots, dilapidated schools that are rendered through rap music, hip-hop that are weaving the thread of a new youth-oriented transnational imagination.

FR 252 MODERN FRANCE

FR 254 CAMUS & SARTRE

FR 255 SARTRE & HEIDEGGER
This course studies two of the most influential works in twentieth-century philosophy: Martin Heidegger’s Being and Time (1927) and Jean-Paul Sartre’s Being and Nothingness (1943). Together these two books defined existential phenomenology and changed the course of philosophy, exerting a profound influence over later writers and thinkers. Since both philosophers sought to fundamentally redefine human subjectivity—its place in society, history, and the philosophical tradition—we will examine concepts such as freedom, reality, temporality, subjectivity, death, emotion, and the relation between self and other. We will also compare Sartre’s insights with those of Heidegger, particularly in regard to the concept of humanism, juxtaposing Sartre’s famous manifesto “Existentialism is a Humanism” (1946) with Heidegger’s critique of Sartre and French existentialism in his “Letter on Humanism” (1947).

FR 262 FRENCH PHILOSOPHY SINCE 1960

FR 265 AESTHETICS
Studies the history of “aesthetic” thought—namely the philosophical reflection on the concepts of beauty, taste, and sublimity, on our affective response to art and nature, and on the role of art and the artist in society—from Plato to the present, with particular emphasis on how it relates to questions of epistemology, anthropology, ethics, ontology, and politics. Readings from Plato, Longinus, Burke, Kant, Hegel, Heidegger, Adorno, Sartre, Merleau-Ponty, Foucault, Lyotard, Derrida, Rancière.

FR 266 BALZAC & BAUDELAIRE IN PARIS
Course examines two of the most compelling and iconic visions of the transformation of society and urban culture we call modernity: the novelistic oeuvre of Honoré de Balzac and the poetry of Charles Baudelaire. We will read, in particular, Balzac’s great novels _Père Goriot_ (1835) and _The Splendors and Miseries of Courtesans_ (1844) and selections from Baudelaire’s _Paris Spleen_ (1869) and his famous _The Flowers of Evil_ (_Les Fleurs du Mal_, 1857), to study how the their multifaceted evocations of nineteenth-century Paris represented a revolution in literary representation. Conducted in French.

FR 272 MADNESS & POST COLONIAL LITERATURE
This course will explore inscriptions of madness in post-colonial African and Caribbean texts. Beyond the obvious and visible signs of what is generally termed "madness" (from the pathological to the political or cultural), we will ask ourselves if the postcolonial arena cannot be interpreted as a pervasive manifestation of madness, that is to say, of something fundamentally "alien, foreign" to the Known, to the imperial destructuring order, and to the disarticulated colonial and post-independent communities. By bringing together texts from different and diverse cultural and intellectual areas such as France, Guadeloupe, and Africa, we seek to confront the various "scriptures." Issues of witch-hunt, of disintegration of Juletane, the Antillean women in West Africa, from Foucault's normative panopticism to Fanon's discussion of the black experience, the postcolonial situation, articulated or silenced, will be the focus of this course. Taught in English.

**FR 274 CARIBBEAN NOVEL & THEORY**

This course is a study of major Caribbean novels and major theoretical texts. The reading will be structured around the notion of "Antillanité" or Creolization elaborated by Martinican Edouard Glissant and his heirs Chamoiseau and Confiant of the "Creolité" movement. The controversial presence of the Other (Africa and France) in the Caribbean, the need to build a Caribbean authenticity in order to participate freely in what Glissant terms "Relation planétaire" (Planetary Relations) will also be thoroughly examined.

**FR 279 IMMIGRATION IN FRENCH LITERATURE AND FILM**

The aim of this course is to investigate the interactions and relationships between French culture and the immigrant "other" from a critical and theoretical point of view. We will examine notions of emigration and immigration, national identity, belonging, exile, cultural integration and assimilation in the literary activity that has emerged in France, and particularly in Paris, by writers emigrating to France mainly from Africa, and will explore what pertinent traits allow the definition of this literature as French, Francophone or otherwise. A number of recent French films that have touched on questions of immigration will provide additional material to supplement study and discussions. Literary and visual texts will be available in both French and English. Knowledge of French is strongly encouraged but not necessary. The course will be taught in English.

**FR 280 FRENCH CINEMA: THE NEW WAVE**

A study of French film from its beginnings through the New Wave.

**FR 281 FRENCH CINEMA 1930-1960**

This course surveys the history of French cinema from its early experiments through the "Tradition of quality" to the moment immediately preceding the emergence of the New Wave. Films selected from the work of the following directors are studied: Lumiére, Méliés, Gance, Dulac, Léger, Clair, Vigo, Renoir, Carné, Ophuls, Pagnol, Clément, and Bresson. Readings include contemporary critical and theoretical discussions, as well as historical analyses.

**FR 285 CLASSICAL FILM THEORY**

**FR 286 GROWING UP IN FRENCH**

What does it mean to grow up in French without being French? What is the price to pay for children confronting a language and culture that are alien but necessary for any social mobility? How is French (language and culture) transformed by bilingual cultural contexts and subjects? This course explores autobiographical novels and stories by Francophone authors growing up in a context dominated by the French language and culture. Taught in French.

**FR 287 FEMINIST FILM THEORY**

Feminism has had a powerful impact on the developing field of film theory from the 1970s to the present. This course will examine the major feminist work on film, moving from the earlier text-based psychoanalytic theories of representation to theories of feminine spectatorship to studies of reception contexts and audience. We will also give some attention to the very important role of feminist theory in television studies. Weekly screenings, keyed to the readings, will allow us to test the value of these positions for close critical analysis of the film or television text. Readings to include: Laura Mulvey, Kaja Silverman, Constance Penley, Judith Mayne, Linda Williams, Jacqueline Bobo, Valerie Smith, Lynn Spigel, Lynne Joyrich, Julie D’Acci.

**FR 288 FRENCH IN FILM: AFRICA, CARIBBEAN, QUEBEC**

The aim of this course is to examine the polyvalent character of French-speaking cinema that is termed as “Francophone.” We will explore issues of the universal application of “Francophone family” that mainly includes African, Caribbean, and French Canadian films, and will investigate the case of French-speaking Europe other than France. We will closely examine the
aesthetic and theoretical questions that each Francophone cinema raises in search of a cinematic discourse along with questions of production, distribution, and exhibition. Weekly film screenings. Knowledge of French is encouraged but not necessary. The course will be taught in English.

**FR 289 PHILOSOPHY OF ART**
Course examines the major philosophical approaches to art, both Continental and Analytic, focusing mainly on the 20th century. Topics studied include beauty, the sublime, mimesis, the nature of art, the end of art, the ontology of art, the meaning of art, art and truth, high and low art, committed versus autonomous art, fascism and art, art and value, art and mass media. Conducted in English.

**FR 290 HISTORY OF FRENCH CINEMA**

**FR 390 SUPERVISED TEACHING**

**FR 391 INDEPENDENT STUDY**

**FR 392 PRACTICUM**

**FR 393 SENIOR PROJECT**

**FR 394 INTERNSHIP**

**FR 404 CONTEMPORARY FRENCH CULTURE**
This course is designed to provide students with a comprehensive view of French Contemporary culture through major trends of French cultural, political, and intellectual life in the recent years. While we cannot study factual representations of French culture, we will attempt to establish a conceptual framework that would help us in the understanding of complex questions such as What does it mean to be French?, What is France? What is French culture?, etc.

**FR 412 TRANSLATION WORKSHOP**
“A Course in French Translation” is intended for those who wish both to improve their comprehension of the written text and to interpret it at an appropriate stylistic level through translation into English. The course will be based on a great variety of texts, elementary to highly sophisticated, belletristic to scientific, selected both by the teacher and by the students. Some oral practice will be introduced as well. A basic reference work, combining grammar and texts, will be required.

**FR 430 FRENCH SOCIAL THOUGHT**

**FR 432 HUGO’S LES MISERABLES**
This course examines one of the world’s greatest and most influential novels, Victor Hugo’s Les Miserables (1862). We will interpret Hugo’s novel as a modern epic that incorporates the genres of the historical novel, the realist novel, and the popular novel. The vast and multifaceted canvas of Hugo’s novel will allow us to discuss issues of social justice, moral philosophy, religion, politics, history, the city of Paris, and love. We will also study some of the many screen adaptations that have been made of the book. Conducted in French.

**FR 433 REALISTS & ROMANTICS**

**FR 435 TEXTS BEYOND BORDERS**

**FR 439 REPRESENTING AFR-AMERICANS**

**FR 441 LE NOUVEAU ROMAN**

**FR 454 CAMUS & SARTRE**

**FR 455 SARTRE & HEIDEGGER**
This course studies two of the most influential works in twentieth-century philosophy: Martin Heidegger’s Being and Time (1927) and Jean-Paul Sartre’s Being and Nothingness (1943). Together these two books defined existential phenomenology and changed the course of philosophy, exerting a profound influence over later writers and thinkers. Since both philosophers sought to fundamentally redefine human subjectivity—its place in society, history, and the philosophical tradition—we will examine concepts such as freedom, reality, temporality, subjectivity, death, emotion, and the relation between self and other. We will also compare Sartre’s insights with those of Heidegger, particularly in regard to the concept of humanism, juxtaposing Sartre’s famous manifesto “Existentialism is a Humanism” (1946) with Heidegger’s critique of Sartre and French existentialism in his “Letter on Humanism” (1947).

FR 462 FRENCH PHILOSOPHY SINCE 1960

FR 465 AESTHETICS

FR 466 BALZAC & BAUDELAIRE

FR 472 MADNESS & POST COLONIAL LIT
This course will explore inscriptions of madness in post-colonial African and Caribbean texts. Beyond the obvious and visible signs of what is generally termed “madness” (from the pathological to the political or cultural), we will ask ourselves if the postcolonial arena cannot be interpreted as a pervasive manifestation of madness, that is to say, of something fundamentally “alien, foreign” to the Known, to the imperial destructuring order, and to the disarticulated colonial and post-independent communities. By bringing together texts from different and diverse cultural and intellectual areas such as France, Guadeloupe, and Africa, we seek to confront the various “scriptures.” Issues of witch-hunt, of disintegration of Juletane, the Antillean women in West Africa, from Foucault’s normative panopticism to Fanon’s discussion of the black experience, the postcolonial situation, articulated or silenced, will be the focus of this course. Taught in English.

FR 474 CARIBBEAN NOVEL & THEORY
This course is a study of major Caribbean novels and major theoretical texts. The reading will be structured around the notion of Antillanité or Creolization elaborated by Martinican Edouard Glissant and his heirs Chamoiseau and Confiant of the Créolité movement. The controversial presence of the Other (Africa and France) in the Caribbean, the need to build a Caribbean authenticity in order to participate freely in what Glissant terms Relation planétaire (Planetary Relations) will also be thoroughly examined.

FR 479 IMMIGRATION IN LIT AND FILM

FR 480 FRENCH CINEMA: THE NEW WAVE

FR 481 FRENCH CINEMA 1930-1960

FR 486 GROWING UP IN FRENCH
What does it mean to grow up in French without being French? What is the price to pay for children confronting a language and culture that are alien but necessary for any social mobility? How is French (language and culture) transformed by bilingual cultural contexts and subjects? This course explores autobiographical novels and stories by Francophone authors growing up in a context dominated by the French language and culture. Taught in French.

FR 488 FRENCH IN FILM

FR 489 PHILOSOPHY OF ART

FR 490 HISTORY OF FRENCH CINEMA

FR 491 MASTER’S READINGS IN FRENCH

FR 495 MASTER’S RESEARCH IN FRENCH

FR 895 CONT OF MASTER’S ENROLLMENT
FR 899 MASTER’S DISSERTATION

FR 985 LEAVE OF ABSENCE

GER 101 ELEMENTARY GERMAN I
This is the first semester of a two-semester sequence using an exciting new interactive approach to language learning. Students are encouraged, right from the start, to communicate in German utilizing basic vocabulary and authentic expressions in their spoken and written work. Listening comprehension is honed using audio taped material featuring a variety of native speakers, while a series of video tapes provide a basic introduction to the cultures of German speaking countries.

GER 102 ELEMENTARY GERMAN II
This is the second semester of a two-semester sequence using an exciting new interactive approach to language learning. Students are encouraged, right from the start, to communicate in German utilizing basic vocabulary and authentic expressions in their spoken and written work. Listening comprehension is honed using audio taped material featuring a variety of native speakers, while a series of video tapes provide a basic introduction to the cultures of German speaking countries.

GER 110 JUSTICE AND EQUALITY

GER 132 INTRODUCTION TO THE ART OF FILM
As an introduction to the art of film, this course will present the concepts of film form, film aesthetics, and film style, while remaining attentive to the various ways in which cinema also involves an interaction with audiences and larger social structures.

GER 151 INTERMEDIATE GERMAN I
Process writing, reading, and listening exercises provide the context in this course for a thorough review of German grammatical structures. Students are expected to write short, weekly essays; complete weekly assignments in listening, reading and/or grammar; and hone their speaking skills through active class participation. Goal of this two-semester sequence is communicative proficiency.

GER 152 INTERMEDIATE GERMAN II
Process writing, reading, and listening exercises provide the context in this course for a thorough review of German grammatical structures. Students are expected to write short, weekly essays, complete weekly assignments in listening, and hone their speaking skills through active class participation. In GER 152, the focus is shifted slightly toward reading authentic material; short pieces of fiction and newspaper articles. Goal of this two-semester sequence is communicative proficiency. The 'Zertifikat Deutsch als Fremdsprache' examination, attesting to this proficiency, is offered at the end of each spring semester.

GER 157 GERMAN IN GERMANY
Students experience the excitement of Berlin, historic center of Germany and capital of the re-unified state. Students stay in the international center of the European Academy located in picturesque Grunewald. Mornings are devoted to intermediate or advanced German language classes and individual work; afternoons and weekends are free for exploring and for excursions to nearby Dresden, Potsdam, and Baltic seashore. Program fee includes ground transportation in Germany, lodging and breakfasts, and main meals at the European Academy in Berlin, German language instruction, and some excursions. Special application required.

GER 160 THE NEW EUROPE

GER 161 EUROPE TODAY

GER 200 ADVANCED CONVERSATION & COMPOSITION
This class assumes enough knowledge of the language for reading somewhat longer fictional and nonfictional texts and viewing German films in the original. The class is organized around general topics and themes. Students will write weekly essays in German on select topics. Class taught in German.

GER 200W ADVANCED CONVERSATION & COMPOSITION
This class assumes enough knowledge of the language for reading somewhat longer fictional and nonfictional texts and viewing German films in the original. The class is organized around general topics and themes. Students will write weekly essays in German on select topics. Class taught in German.

**GER 202 INTRODUCTION TO CULTURAL STUDIES**
This is one of several core classes required for the major. Students should have completed at least 152 and preferably 200. This course will introduce students to basic principles of cultural analysis at the heart of the discipline of German Studies. Emphasis will focus on how the media act to form and facilitate various aspects of issues in contemporary German culture.

**GER 202W INTRODUCTION TO CULTURAL STUDIES**
This is one of several core classes required for the major. Students should have completed at least 152 and preferably 200. This course will introduce students to basic principles of cultural analysis at the heart of the discipline of German Studies. Emphasis will focus on how the media act to form and facilitate various aspects of issues in contemporary German culture.

**GER 203 INTRODUCTION TO GERMAN LITERATURE**
Everything you ever wanted to know about German literature but were afraid to ask. This course looks at German poems, plays and novellas from various historical periods and within the context of several techniques of interpretation. It is designed to prepare students for sophisticated analysis of literary texts.

**GER 203W INTRODUCTION TO GERMAN LITERATURE**
Everything you ever wanted to know about German literature but were afraid to ask. This course looks at German poems, plays and novellas from various historical periods and within the context of several techniques of interpretation. It is designed to prepare students for sophisticated analysis of literary texts.

**GER 204 MARX AND MARXISM**
It is not overstated to say that the works of Karl Marx have provided the transformational impulse to many of the changes of the 20th century. Who was this person, Karl Marx? Why is it that in this post-Cold War world his writings continue both to inspire and threaten contemporary readers? How have those inspired by Marx further developed his ideas to constitute the discourse of Marxism? In this course we will begin with discussions of key works by Marx. We will then move on to examine some significant contributions to Marxism. Additionally majors and minors can sign up for GER 211 where significant texts will be read and discussed in German.

**GER 205 NIETZSCHE & THE NIETZSCHEANS**
Friedrich Nietzsche continues to be one of the most influential modern philosophers, yet controversy surrounds almost every aspect of his life and work. This course will help students go beyond the controversy in order to consider Nietzsche's texts discerningly and how he approached the problems of truth, power, and morality. Close examination of his most important writings will be complemented by inquiry into Nietzsche's effects on twentieth-century philosophy. Other thinkers include Martin Heidegger, Michel Foucault, Sarah Kofman, Jacques Derrida and Giles Deleuze.

**GER 207 GERMAN IN GERMANY**
An intensive program offered in German at all levels in Berlin, Germany, for one month in summer. Instruction by native Germans with University of Rochester faculty member in residence. Includes side trips and excursions in this historic area.

**GER 209 COWBOYS & INDIANS**
What makes a Western a Western? Is it cowboys and Indians and vistas of the American West? Is a Western if tough guy Clint Eastwood stars in a film by an Italian director shot in Spain? Or if a German who had never been to the United States writes about the heroic Indian Winnetou and the film versions of the novels are shot in Eastern Europe? This course will explore the myth of the American West in film and literature, including Westerns from Germany, Asia, and of course, the US. Texts and discussions will be in English.

**GER 211 JEWISH WRITERS AND REBELS**
In February 2011, the website Jewcy published a list of the 50 most essential works of Jewish fiction of the last 100 years. The featured books come from many different languages, cultures, and time periods and are written in a myriad of literary styles. Although few would argue with the names on the list (Kafka, Bellow, Singer), the diversity of the authors involved raises the
question: what makes Jewish literature Jewish? This course will attempt to answer that question by looking at an international group of writers (some of whom identify as Jewish and some of whom do not) who often challenge their (religious and cultural) upbringing as well as the dominant politics of the countries in which they live. The authors we will read include: Franz Kafka, Jakov Lind, Bruno Schulz, Edmund Jabès, Georges Perec and Clarice Lispector.

GER 215 BERLIN: TALES OF A CITY
Who or what defines a city? Do architecture, cultural productions and politics distinguish it, or is it characterized by the banal activities at work, in the home, or in the public gardens? In this course we will encounter Berlin in the visual arts, literature, and film, as well as in historical and philosophical texts. Questions of gender, class, race and sexuality will enable us to approach the city from various perspective so as to better understand it as both a site of and metaphor for artistic production, philosophical reflection, political engagement and banal existence. All readings and discussions in ENGLISH. Freshmen and sophomores especially encouraged.

GER 218 DEEP THOUGHTS WITH GERMAN THINKERS
Why are we here? Why do we think what we think? Why do we like art? Appreciate music? Why do we create? Contemplate? Heal? Destroy? All of these big questions had answers…once upon a time. And most of those answers were in…German! That’s right: from the late 18th century to the middle of the 20th century German thinkers dominated the intellectual landscape of the world. This course will look at small texts by some of the most important German writers, musicians and philosophers during this period: Goethe, Kant, Beethoven, Hegel, Marx, Nietzsche, Freud, Schoenberg, Benjamin, Heidegger, Adorno and more. Additionally we will look at scientific and medical writings during this period to better understand why before 1933 Germans won more Nobel prizes than Britain and America combined. This course will be taught in English and all the literature will be in English.

GER 219 WEIMAR CULTURE

GER 229 KAFKA & HIS WORLD
This course explores the weird, dreamlike, eerie, and inexplicable world of Kafkas writings. In Kafkas stories dogs conduct investigations, apes report to academies, men turn into bugs, the Statue of Liberty holds up a sword, and arrests occur without explanation as all expectations and assurances about the ‘rules’ of existence, thought, and social order come into question. In this course we will read texts such as: The Trial, The Metamorphosis, Amerika, The Castle, Investigations of a Dog, A Report to an Academy, In the Penal Colony, and A Hunger Artist. This course is taught in English.

GER 234 STRANGERS IN A STRANGE LAND

GER 235 HITLER’S GERMANY

GER 237 AFTER THE WALL

GER 247 THE HOLOCAUST IN FILM AND LITERATURE
How does one represent the unrepresentable? This is the key question we will explore as we look at films and literature about the Holocaust. As we look at fictional films, novels, documentaries and memoirs, we will discuss topics including memory, trauma, truth and representation. This course offers a look at the ways in which artists and their audiences negotiate the themes of loss, horror and redemption within the context of the Holocaust and its aftermath.

GER 252 BRIGHT LIGHTS, BIG CITY: THE URBAN IMAGINATION
The city in film and literature is never just a physical space - discourses of modernity and urban life are mapped onto real and imagines urban spaces. In this course we will explore how the relationship between the spaces of the city and the stories told about and through them shape our understanding of urban life. Some of the texts we will examine are: Fritz Lang’s M, Arthur Schnitzler’s Dream Story, and Lloyd Bacon’s 42nd Street.

GER 256 GERMANY YEAR ZERO: POST-WAR GERMAN LITERATURE, 1945-89
This upper-level seminar will acquaint students with literary developments in German-speaking countries after the end of World War II. The survey of texts from East and West Germany, and Austria, will address questions of Vergangenheitsbewältigung
and social critique in the 1950s, the politicization of literature in the 1960s, the Neue Innerlichkeit of the 1970s, and literary postmodernity of the 1980s. All texts and discussions will be in GERMAN.

**GER 260** Truth and Power

**GER 272** GENDER & SEX IN 20TH CENTURY

This course will examine literary, artistic, and theoretical representations of gender and sexuality as they have changed in the course of the 20th Century. The focus will be on texts from Western Europe and the US, but we will also consider other perspectives. From the New Women to French Feminists and transnational feminism. From homophile societies to “queer nation and gay marriage”, from Sigmund Freud to Michel Foucault and Judith Butler, we will explore the contested and politically charged debates around gender and sexuality that have shaped our views of identity over the last century.

**GER 275** DIGITAL CITYSCAPES

Most of our interactions today with the geography of a city are digital - we use our phones to find a location, we mark where we've been on a Facebook map, we embed GPS information into our photos. Beyond these everyday uses, digital projects abound that map historical and statistical data onto geographical locations, drawing connections between physical locations and more abstract information. In this course we will examine the ways these interactions between the digital and the physical shape our understanding of the world around us.

**GER 282** FAßBINDER

**GER 283** CINEMA & REVOLUTION: WEST GERMAN AVANT-GARDE

This course will explore the relationship between film and revolution in West German cinema from 1965 to the present. We will consider cinema's potential as a revolutionary medium, while also focusing on how revolution is thematized and constructed in both fiction and documentary films. The course will engage with issues such as coming to terms with the fascist past, recreating the cinema as a revolutionary artistic form, feminism as a revolutionary perspective, the domestic sphere as a revolutionary space, and the co-optation of the cinema's revolutionary potential through mass consumption.

**GER 284** HOLLYWOOD BEHIND THE WALL: INTRODUCTION TO EAST GERMAN CINEMA

This course will explore major developments in the East German cinema, including issues such as coming to terms with the fascist past, popular filmmaking and art cinema, cinema as a pedagogical tool, artistic dissent and state censorship, socialist ideologies of gender, and the politics of documentary. Each film will be explored in relation to its socio-historical context, providing students with an overview of East German film and culture.

**GER 285** MEN OF MARBLE, WOMEN OF STEEL: AN INTRODUCTION TO EAST EUROPEAN FILM

This course will provide a general introduction to the history, artistry and politics of East European film. We will begin by considering the place of East European film in the context of contemporary film studies and the industry structure of state socialist film making. We will then explore individual films from a regional (not national) perspective, considering how they confront issues such as the burden of history and ethics, the tensions between modernity and tradition, the struggle between creativity and censorship, as well as the reluctant feminism of state socialism and representations of gender and sexuality.

**GER 286** NEW AUSTRIAN CINEMA

In this course, we will focus on recent developments in Austrian cinema. Not unlike other cinematic “new waves,” Austria’s artists politically and aesthetically resist the petit-bourgeois mindset of their fellow citizens. Considered within the national/European context of “official” Austria and its long avoidance of dealing with its fascist past, and within a global context of the post-modern “state of exception,” new Austrian film offers viewers a spectatorial position from which to consider the “society of control” (Foucault/Deleuze/Hardt). Beginning with the avant-garde works of VALIE EXPORT, this course will emphasize works by Barbara Albert, Florian Flicker, Michael Glawogger, Michael Haneke, Stefan Ruzowitzky, Ulrich Seidl, Peter Tscherkassky, and Valeska Grisebach.

**GER 288** MOTHERS, COMRADES & WHORES

In this course we will explore representations of women in post-World War II German cinema. Moving chronologically from the building of two German states to the post-unification period, we will consider the constantly shifting meaning of ‘woman’ in popular and avant-garde films, narrative and documentary films, films by both male and female directors. We will consider
equally films from East and West Germany. How does 'woman' function as a narrative device in these films? Do women behind
the camera change 'woman's' meaning within the film? Can 'woman' consistently be reduced to one narrative trope (mother,
comrade or whore), or does she resist? All readings and discussions are in English; all films are subtitled.

GER 294 ON GENEALOGY

GER 391 INDEPENDENT STUDY

GER 392 PRACTICUM

GER 393 SENIOR PROJECT

GER 394 INTERNSHIP

GER 404 MARX & MARXISM

GER 405 NIETZSCHE & NIETZSCHEANS
Friedrich Nietzsche continues to be one of the most influential modern philosophers, yet controversy surrounds almost every
aspect of his life and work. This course will help students go beyond the controversy in order to consider Nietzsche's texts
discerningly and how he approached the problems of truth, power, and morality. Close examination of his most important
writings will be complemented by inquiry into Nietzsche's effects on twentieth-century philosophy. Other thinkers include Martin
Heidegger, Michel Foucault, Sarah Kofman, Jacques Derrida and Giles Deleuze.

GER 409 ON GENEALOGY

GER 411 JEWISH WRITERS AND REBELS

GER 415 BERLIN: TALES OF A CITY

GER 418 GERMAN THINKERS

GER 419 WEIMAR CULTURE

GER 429 KAFKA & HIS WORLD
This course explores the weird, dreamlike, eerie, and inexplicable world of Kafka’s writings. In Kafka’s stories dogs conduct
investigations, apes report to academies, men turn into bugs, the Statue of Liberty holds up a sword, and arrests occur without
explanation as all expectations and assurances about the “rules” of existence, thought, and social order come into question. In this
course we will read texts such as: The Trial, The Metamorphosis, Amerika, The Castle, Investigations of a Dog, A Report to an
Academy, In the Penal Colony, and A Hunger Artist. This course is taught in English.

GER 434 STRANGERS IN A STRANGE LAND

GER 437 AFTER THE WALL

GER 447 HOLOCAUST IN FILM & LIT

GER 452 BRIGHT LIGHTS, BIG CITY
The city in film and literature is never just a physical space - discourses of modernity and urban life are mapped onto real and
imagines urban spaces. In this course we will explore how the relationship between the spaces of the city and the stories told
about and through them shape our understanding of urban life. Some of the texts we will examine are: Fritz Lang’s M, Arthur
Schnitzler’s Dream Story, and Lloyd Bacon’s 42nd Street.

GER 456 GERMANY YEAR ZERO
GER 460 TRUTH & POWER

GER 472 GENDER & SEX IN 20TH CENTURY
This course will examine literary, artistic, and theoretical representations of gender and sexuality as they have changed in the course of the 20th Century. The focus will be on texts from Western Europe and the US, but we will also consider other perspectives. From the New Women to French Feminists and transnational feminism, from homophile societies to “queer nation and gay marriage, from Sigmund Freud to Michel Foucault and Judith Butler, we will explore the contested and politically charged debates around gender and sexuality that have shaped our views of identity over the last century.

GER 475 DIGITAL CITYSCAPES

GER 482 FAASSBINDER

GER 483 CINEMA & REVOLUTION: WEST GERMAN AVANT-GARDE
This course will explore the relationship between film and revolution in West German cinema from 1965 to the present. We will consider cinema’s potential as a revolutionary medium, while also focusing on how revolution is thematized and constructed in both fiction and documentary films. The course will engage with issues such as coming to terms with the fascist past, recreating the cinema as a revolutionary artistic form, feminism as a revolutionary perspective, the domestic sphere as a revolutionary space, and the co-optation of the cinema’s revolutionary potential through mass consumption.

GER 484 HOLLYWOOD BEHIND THE WALL: An Introduction to East German Cinema
This course will explore major developments in the East German cinema, including issues such as coming to terms with the fascist past, popular filmmaking and art cinema, cinema as a pedagogical tool, artistic dissent and state censorship, socialist ideologies of gender, and the politics of documentary. Each film will be explored in relation to its socio-historical context, providing students with an overview of East German film and culture.

GER 485 Men of Marble, Women of Steel: An Introduction to East European Film
This course will provide a general introduction to the history, artistry and politics of East European film. We will begin by considering the place of East European film in the context of contemporary film studies and the industry structure of state socialist film making. We will then explore individual films from a regional (not national) perspective, considering how they confront issues such as the burden of history and ethics, the tensions between modernity and tradition, the struggle between creativity and censorship, as well as the reluctant feminism of state socialism and representations of gender and sexuality.

GER 486 NEW AUSTRIAN CINEMA

GER 488 WOMEN IN GERMAN CINEMA
It is common now to hear that we live in a transnational age, but what does this really mean? How do we imagine our transnational community? In this course we will examine contemporary transformations from national to transnational culture by focusing precisely on film production. This course will examine how film provides one of the central sources of transnational images. Germany will provide us with a case study and we will view a wide variety of German and European, national and transnational films. Through this case study we will address larger questions of globalization. Through hot new cult films like "Run, Lola Run," or big budget epics like "House of the Spirits," we will examine the aesthetic and technical transformations that have given rise to these new ways of imagining our community. PLEASE NOTE: Attendance at weekly film screening is mandatory -- alternative time will be set up.

GER 491 MASTER’S READING IN GERMAN

GER 492 PRACTICUM

GER 495 MASTER’S RESEARCH IN GERMAN

GER 584 HOLLYWOOD BEHIND THE WALL

GER 588 MOTHERS, COMRADES & WHORES
GER 895 CONT OF MASTER'S ENROLLMENT

GER 899 MASTER'S DISSERTATION

GER 985 LEAVE OF ABSENCE

HEB 101 ELEMENTARY HEBREW I
Introduction to the structure of standard modern Hebrew. This class is intended for students with no previous instruction in the language or for those who have had some unsystematic exposure to it. Practice in reading, writing, basic use and grammar. In addition to texts, relevant cultural materials are provided through the use of video and technology based materials.
Offered: Fall

HEB 102 ELEMENTARY MODERN HEBREW II
Direct continuation of Hebrew 101 with emphasis on enhancing basic reading, writing, and speaking skills in standard modern Hebrew. In addition to reading texts, relevant cultural materials are provided through the use of audio, video and technology based materials.
Offered: Spring

HEB 103 INTERMEDIATE HEBREW I
Direct continuation of Hebrew 102 with emphasis on enhancing reading comprehension and writing and speaking skills in standard modern Hebrew. Students enrolling are expected to have a good understanding of basic Hebrew grammar structures, including familiarity with common verb forms. In addition to texts, relevant cultural materials are provided through the use of video and technology based materials.
Offered: Fall

HEB 104 INTERMEDIATE MODERN HEBREW II
This is a fourth semester course in the Hebrew language series designed as a direct continuation of HEB 103. The focus of instruction is on the enhancement of language skills through the acquisition of complex morphological and syntactical structures and the expansion of vocabulary and idioms. The course has an emphasis on oral and written communication in both standard and colloquial modern Hebrew. In addition to reading texts, relevant cultural materials are provided through the use of audio, video and technology based materials.

HEB 110 INTRO TO BIBLICAL HEBREW
A one-semester introduction to classical Hebrew for beginners. The course will cover the Hebrew writing system (alphabet and pointing/vocalization rules), basic grammatical structures and vocabulary, and the guided reading and translation of selected simple biblical narratives.

HEB 204 HEBREW THROUGH MEDIA AND LIT
Designed to develop advanced reading and conversational skills using various materials including Israeli newspapers, Hebrew movies and songs, and texts from modern Hebrew literature (fiction and poetry). Writing skills are enhanced through a series of related home-assignments. Review of Hebrew verbal system and syntactical structures and enrichment of vocabulary are also among the objectives of this course.
Offered: Spring

HEB 390 SUPERVISED TEACHING

HEB 391 INDEPENDENT STUDY

HEB 393 SENIOR PROJECT

HEB 394 INTERNSHIP

HIS 100 Gateway to History: Topics course
History 100 is an introduction to historical practice – what professional historians actually do. It is a requirement for history majors, but we encourage all interested undergraduates to enroll. The class is a small seminar, devoted largely to discussion of primary texts. A final research paper of about ten pages length is required. Juniors and seniors can only register with instructor’s permission. Each section of this course will be organized around a particular theme - please see term description for details.

Offered: Fall Spring

HIS 101 The Ancient World
The course introduces European history by examining the civilizations of the ancient world: the cultures of Egypt, Mesopotamia, Greece and Rome. We will study multiple aspects of these cultures with a focus on the emergence of the city and its social, political and economic makeup, as seen through a variety of sources from texts and material culture. Students will become aware of the dimension of historiography; that is, how we have come to interpret these peoples today.

HIS 102 The West and the World to 1500
While exploring the history of Europe and its neighbors from the ancient to the medieval period, this course focuses on how people borrowed from, adapted, and reconciled various ideas to suit their own needs to form, over time, a coherent set of cultural values. To this end, we will consider several themes throughout the semester, including changing models of political organization, ideas of individual rights and responsibilities, attitudes towards women and ‘outsiders’, and understandings of nature and of divine power.

HIS 103 The West and the World since 1492
A thematic survey of European history during the period of Europe's rise to and fall from global dominance. It follows roughly on History 101 but does not assume that you have taken it. The reading consists of important philosophical, political, and literary works and documents, supplemented by a textbook.

HIS 105 Justice and Equality
What is justice? Is it universal or does it vary across cultures and over time? Does justice require equality? If so, equality of what? What steps must we take to become more just and more egalitarian? What can art tell us about justice? What can justice tell us about art? The world’s most powerful minds have wrestled with these questions, and the answers they have posed shape our contemporary global debates. In this unique course, taught by multiple faculty from across the humanities and social sciences, we will consider different conceptions of justice and equality, with special attention to their relevance to the contemporary moment. Beginning with Plato’s Republic, we will address works by such thinkers as Rousseau, Mary Wollstonecraft, Franz Fanon, Ngugi wa Thiong’o, and Martin Luther King. Students and faculty from multiple sections of this course will occasionally meet as one group to analyze how different disciplines confront these complex topics. Outside speakers will also address the course.

HIS 106 Witchcraft and Witch Hunts, 1400-1800
During the Renaissance and Reformation, many people throughout Europe became convinced that society was threatened by conspiracies of witches. The resulting panics led to the execution of thousands of people, mostly lower-class women. The course delves into intellectual, cultural and social history to explain how and why this happened, with discussion of both broad trends and local factors. As we will see, responses to witchcraft reflected major changes in European society, culture, and politics that lent new meanings to traditional ideas about witches, possession, and malefic and enabled the systematic condemnation of certain groups of people. The ways in which these ideas were mobilized in individual communities and the reasons for doing so varied widely, however, and we will therefore closely examine several specific examples of witch hunts in order to better understand why they were appealing to so many, why they flourished for a time, and why they ultimately faded.

HIS 108 N/A

HIS 109 Introduction to Archaeology
This course introduces the student to the field of archaeology through three units of study: 1) The history of excavation from ancient to modern times, 2) The techniques of excavation and the analysis of material remains, 3) Modern theories of cultural interpretation of archaeological sites. We will discuss the value of archaeological approaches to the fields of anthropology, history, architectural and art history, religious and classical studies. Much of the instruction will be illustrated by case studies of sites; although the view will be global, there will be a concentration in Old World material from prehistory to the early modern period. Students will be required to write three essays, with subjects selected from each of the three course units.
HIS 110 The Making of Modern Africa
This course uses film, novel, and historical studies to examine the following themes in the making of modern Africa: the forging of new national identities, creation of wage laborers, and the restructuring of agricultural work, gender, and social age. Students will also explore how African women and men, from their homes and workplaces, and as part of nationalist or national liberation movements during and after the Cold War, have sought to redefine their place in the global economy against the backdrop of new opportunities and challenges presented by the HIV/AIDS pandemic, hunger, international debt, and engagement with China.

HIS 112 Introduction to African Religions of the Diaspora
This course introduces students to the development of African religions in the Americas, Caribbean, and Canada. Religious traditions such as Africanized Christianity, Santería, Candomblé, Vodun, and Spiritual Baptists will be explored. The course not only provides students with a historical overview of each tradition, but it also explores theological frameworks, doctrinal principles, and ritual activities related to each tradition. Class format includes lectures, discussions, and films.
Offered: Summer

HIS 116 N/A

HIS 116A N/A

HIS 120 Cultural History of Ancient Greece
In this course we will survey the unique military, political, and economic history of ancient Greece from the Bronze Age to the death of Alexander the Great. In addition, and more unusually, we will look at ancient Greece's rich cultural and social history.

HIS 121 The Roman World
The course offers a comprehensive account of the history of Rome. It first deals with her humble beginnings as a small city-state in central Italy, continuing with the process of Roman hegemony in the Italian peninsula and the Mediterranean world, and ending with the times that led to the fall of the Roman Empire in the west in AD 476. Students will be introduced to the analysis of written and archaeological sources in order to answer the basic question, How do we know about the Romans? Thus, the analysis of the evidence will be the foundation to discuss major topics of Roman civilization. For example, an examination of the city of Pompeii will allow us to reconstruct the daily life of a wealthy Roman city, and the first Roman emperor Augustus' written statement of his own political and military achievements provides us with evidence for the transition from a republican to an imperial form of government.
Offered: Summer

HIS 123 A World Reborn and Reformed: Europe, 1450-1700
The centuries from 1400 to 1800 are often described as the birth of modern Europe. In this course, we will examine this period both as a precursor to our times and on its own terms. We will look both at well-known developments—Renaissance, Reformation, colonization, absolutism, and Enlightenment—and at the ways in which regular people navigated the religious, social, economic, and political transformations that upended their everyday lives. Through these topics, we will determine what is both 'early' and 'modern' about the period from a variety of perspectives.

HIS 124 Modern Europe

HIS 125 Vikings

HIS 130 Russian Civilization
Russian Civilization from its beginnings a thousand years ago to the present day. Each unit will cover historical and cultural background as well as literary texts. We will examine important national “myths” (narratives with a variable connection to the historical record) that govern the Russians' understanding of their history and culture, including: the Golden Age of Kiev, Moscow as the Third Rome, and the myths surrounding the city of Petersburg. We will analyze traditional tensions in Russian civilization which prevail today, such as those between: chaos and order, foreign influence and a strong national identity, innovation and tradition, and between radical skepticism and faith. Readings will include: Russian fairy tales and saints' lives, excerpts from the autobiography of the 17th century heretic Avvakum, tales by Pushkin and Gogol, one of Dostoevsky's most powerful and influential novels (“The Devils/Possessed”), and a wide range of materials from the twentieth century. In English.


**HIS 132** Imperial Russia
This course examines the history of the Russian Empire from the reign of Peter the Great (1692-1725) to the revolutions of 1917. Students will read primary sources in translation, academic articles, and a survey text. About one-half of class time will be devoted to discussion of the readings. Topics will include Peter's westernization of Russian elites and the costs thereof, the Pugachev rebellion of 1773-1775, the spread of Enlightenment ideals to Russia during the Napoleonic Wars, the abolition of serfdom, Sergei Witte’s industrialization drive, socialist movements in Russia, World War I, and the causes of the revolutions of 1917.
Offered: Summer

**HIS 133** The Russian Revolutions from Lenin to Putin
This class examines the history of the Soviet Union from foundation (1917) to collapse (1991), focusing on internal developments in the Russian part of the Union. We will begin with a discussion of the background to the collapse of the imperial Russian state in 1917, including changes in Russian society and World War I. Later, the class will look at questions such as: Did the New Economic Policy of the 1920s create a stable socioeconomic order? How did Stalin defeat his political rivals and create a personal dictatorship? What were the motivations for the Great Terror of 1937-1938? How did the Soviet Union defeat Nazi Germany in World War II? We will also devote some time to the Soviet role in the Cold War and the appeal of Leninism in colonized and post-colonial societies. The course will conclude with a discussion of the collapse of the USSR and the emergence of a soft authoritarian order in post-Soviet Russia. The syllabus will emphasize primary-source readings and class discussion.

**HIS 134** Russia Now

**HIS 135** Dante's Divine Comedy of Dante Alighieri: Discover the Wonders of a Medieval Mind
This course is the first segment of a two-semester sequence on The Divine Comedy. The purpose of the sequence is to introduce students to the liberal arts through one of the most significant texts in Western civilization. While reading about Dante's adventurous journey from Inferno to Paradise, students will gain a perspective on the Biblical, Christian, and Classical traditions, and on the political, literary, philosophical, and theological dimensions of medieval European culture. The sequence will also provide students with an avenue of investigation on the problem of knowledge--one of the poem's central concerns--and guide them in developing critical tools and research skills. We will begin the course by building a historical and intellectual frame of reference in which to locate THE DIVINE COMEDY. We will then proceed to a close reading of INFERNO and a few cantos of PURGATORY. Lectures and class discussion will be complemented by a weekly recitation session.

**HIS 137A** History of Poland (study abroad)
A survey of Polish history from the Piast dynasty through the period of Jagiellonian rule, the time of the elected kings, 123 years of partitioned Poland, the 1920's and 1930's, World War II, the creation and functioning of the People's Republic, the collapse of the communist system.

**HIS 142** Traditional China
This course focuses on the history of traditional China from antiquity to the 18th century. Two thousand years of civilization, six thousand miles of the Great Wall, a silk road linking China to Rome, and seven maritime voyages sailing across the Pacific and Indian oceans. How have the notions of “China” and “Chinese” civilization transformed over time through cultural diffusion, commercial exchange, and military expansion? How does increased knowledge of Chinese history change our conceptions of Western civilization and the currents of world history? No prior knowledge of Chinese history or language is required for this course. Besides a standard textbook, one academic monograph (Mountain of Fame) and one Chinese classics (Dream of the Red Chamber) will anchor our readings throughout the course.
Offered: Summer

**HIS 143** Modern China, 1600-Present
This class covers the search for modern China in the twentieth century. We will trace how China, between invasion, war, and revolution, transformed from an empire to a republic, from republic to Communist state, and from Communist state to the economic powerhouse that it is today.
Offered: Summer

**HIS 145** Modern Japan
This course covers Japanese history from the 1800s to the present. During these two hundred years, Japan went through a rollercoaster of events: the Meiji Restoration, industrialization, fascism, wars, atomic bombs, an economic miracle, a “lost” decade, and recently a devastating tsunami. The Japanese paradox of Chrysanthemum and Sword still awaits explanation. Come join me in this journey of books, archives, films, and anime in search of modern Japan.

**HIS 146 Traditional Japanese Culture**
Traces the development of the Japanese cultural tradition through the most prominent examples of its visual, literary, and performing arts. These include the poetry, courtly romances, and scroll painting of the ancient courtiers; the poetry, Noh drama, and ink painting of the medieval samurai and Zen monks; the haiku poetry and art of early modern literati groups; and the poetry, kabuki theater, and print art of the new urban classes. Also examined are architecture, flower arranging, and the artistic complex of the tea ceremony. Emphasis is given to the social contexts of artistic expression.

**HIS 147 Issues in Contemporary Japanese Culture**
A close look at the recent Japanese literary and cultural scene, with novels by Murakami Haruki (The Elephant Vanishes) and Yoshimoto Banana (Kitchen); films by Itami Juzo (Tampopo) and Morita Yoshimitsu (The Family Game); manga from Tezuka Osamu (Phoenix) and Ikeda Riyoko (The Rose of Varsailles) to the present and anime from Otomo Katsuhiro (Akira) on; and recent views of Japanese culture from at home and abroad. Other areas of interest include women's and gay literature, "business novels," and an examination of the role of the media in today's consumer culture. Graduate students are expected to do additional reading, give a class presentation, and complete a longer seminar-type paper. Class taught in English with additional instruction in Japanese as required for majors.

**HIS 148 N/A**

**HIS 150 Colonial Latin America**
This introductory survey course will focus on the process of colonization that the indigenous societies of the Western Hemisphere experienced from the initial period of contact with Iberians to the Latin American independence movements. The ensuing influx of Europeans, Africans, Asians and other displaced indigenous populations formed diverse, vibrant societies defined as much by their cultural mixture as by their inherent political, social and economic inequality. Latin America was arguably the site of the most intense and unequal encounter of cultures, technologies, diseases and religions during the late fifteenth and early sixteenth centuries. This course will cover the ensuing three centuries of change, accommodation and negotiation that defined the region.

**HIS 151 Modern Latin America**
This introductory survey course will cover the difficult process of nation-building that twenty-odd societies south of the Rio Grande experienced during the nineteenth and twentieth centuries.

**HIS 153 History of Brazil, 1500-2009**
This introductory course will highlight major institutions, events and trends as Brazil transitioned from a rural, slave society to a highly urbanized society with one of the world's most promising economies. Divided into three periods, the course first considers how Portuguese, African and indigenous institutions and traditions molded the colonial period, where sugar and then gold dominated Brazil's economy. The second part begins with Brazil's independence from Portugal in 1822 and covers the persistence of slavery, the introduction of railroads, European immigration and the importance of coffee during the Brazilian Empire. The third part of the course shows how samba, Carnaval, industrialization, and soccer as well as underdevelopment, dictatorships, and favelas define modern Brazilian history.

**HIS 154 History of Latin America through Soccer**

**HIS 155 Society and Culture in Modern Latin America: A Film Perspective**

**HIS 157 N/A**
Offered: Spring

**HIS 159 N/A**

**HIS 160 United States History to 1865**
A survey of the history of the North American continent from its peopling and colonial rivalry to the founding of the United States, its development, and eventual Civil War. Topics include international competition, economic growth, the role of slavery, and political conflict.

**HIS 161 United States History since 1865**
Explores the history of the United States from the end of the Civil War to the present. It concentrates on the consequences of industrial capitalism and the efforts to reform it. It investigates the growth of government, the changes in the nature of the American population, and the transformation of values to which American pledged allegiance. Along the way, it touches upon the five major wars that the United States fought and the effects on the homefront of those conflicts.

**HIS 162 Early America to 1783**
A study of the discovery, settlement, and development of America, 1580-1783.

**HIS 166 Liberal America, 1929-1973**
This course is an examination of the development of American politics, society, and culture between the onset of the Great Depression and the end of the Cold War. It focuses on the creation, consolidation, and eclipse of the "New Deal order" a liberal political economy centered on a constrained corporate capitalism, a modest welfare state, and a national security apparatus designed to wage the Cold War and extend American power abroad.

**HIS 167 Postindustrial America, 1973-Present**
Examines American politics, society, and culture since 1973. Focus is on the deindustrialization of the economy, the revitalization of conservatism, and the "culture wars."

**HIS 168 Introduction to American Politics**

**HIS 170 African-American History I to 1900**
We will begin our survey of African-American life and culture in fifteenth-century Saharan Africa. After examining the primary features of pre-European African society, we will assess the disruptions triggered by European arrival. A discussion of the "Middle Passage" -- the transportation of enslaved Africans to North America, and the Africans' adjustment to their new environment will compose the first section of the course. We will then focus on the process of "Americanization" as the Africans became African-Americans. The struggle for freedom and citizenship will conclude our survey. The course readings will be selected from autobiographies by Africans and African-Americans, and some brief selections from secondary texts. Using the autobiographies as historical source material, we will describe the values and cultural practices of Africans in America, and the ways in which African-Americans adapted to and shaped American life and society.
Offered: Summer

**HIS 172 History of Jazz**
This study of Jazz, as an American musical art form, will be structured around the lives and music of jazz musicians, across a range of instrumental, vocal, and ensemble genres. Course focuses on jazz titans, those individuals and musical groups distinguished by their seminal and permanent influences, such as Louis Armstrong, Miles Davis, or Coleman Hawkins or shorter intense careers, such as Charlie Parker. Blues, ragtime, swing, bebop, cool, progressive, and free jazz are landmark terms. And finally, study of the musical history will be enhanced by considerations from sociological, linguistic, and philosophical perspectives. The instructional format includes lectures, discussion and intense emphasis on listening. This course is designed for students with little or no musical training; simple technical, musical vocabulary and concepts will be provided. Reading, listening assignments, brief written assignments and two exams. No prerequisites.
Offered: Spring

**HIS 172B History of Jazz II**

**HIS 173 The Blues**
The blues from its earliest forms to recent developments. It is both a history and a cultural studies course, and the Monday class and the Wednesday class will have different focuses on this account. The primary focus of the Monday class will be historical, examining the music and its development in chronological terms. The primary focus of the Wednesday class will be cultural topics, continuing themes in the music and the lyrics, its reception in American society, and we will trace these by moving back

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and forth in time. Among the important topics and themes will be race, religion and sexuality; the economic effects of the music industry on the blues and the people who played them, the reception of the blues in African-American culture, and later among white Americans. The goal of the course is to explore the great influence of the blues on American culture. Musical aspects of the blues will also be covered: its peculiar structure and characteristic scales, but no musical knowledge is presumed or needed.

Offered: Fall

HIS 174 American Military History
American history has been largely shaped by wars. This course will survey the history of American wars; the military, naval, and civil institutions that have been created to serve the changing needs of national defense; and the citizen-soldiers who have preserved the liberty of the Republic.

HIS 175 Religion in America

HIS 177 N/A
Offered: Summer

HIS 180 History of Technology
This course surveys the history of technology and its impacts on agriculture, communication, transportation, housing, health, war and society. The Romans used technology to build an empire, as did Venice, Great Britain, America, and the Soviet Union, but each also discovered the limits of technology. In addition to examination of inventors and inventions, the role of government and society in technological innovation will be examined.

HIS 182 Speaking Stones
This course will examine grave stones and funerary architecture in Rochester's historic Mt. Hope Cemetery. Students will be introduced to western funeral ritual and practice, with a particular focus on funerary architecture and cemeteries in the United States, and the place of graves and graveyards in popular fiction and culture. Then they will examine the iconography and epigraphy of graves and funerary monuments in terms of their function of forging symbolic connections among the living and the dead. Case studies will be drawn from Mt. Hope Cemetery, which will further serve to illuminate both Rochester's history, and American religious belief and practice.

HIS 183 History of Christianity I
The purpose of this course is to explore the general development of Christianity throughout its twenty centuries of existence, paying special attention to the religious presuppositions behind Christianity and its complex relationship to its socio-cultural matrix. The course will focus on important moments in Christian history, including its inception as a Jewish religious movement set in motion by Jesus, its dissemination in the Greco-Roman world by Paul of Tarsus, its growth and triumph in the Roman Empire, the split between the Greek- and Latin-speaking churches, medieval Catholicism, the Reformation and rise of Protestantism, Christianity and the modern world, and contemporary movements and tendencies within the Christian churches.

HIS 184 History of Islam
This course will trace the development of the religion of Islam from its origins in the Qur'an and Muhammad's teachings, through the codification of the classical tradition in its various forms, and finally to the living Islam of the contemporary world.

HIS 185 A History of the Future: Millennial Visions in Film and Literature
Through literature and film, this course examines how people at various points in the past have imagined our future--and the ways in which those “millennial visions” were conditioned by specific historical contexts. The course looks at both positive and negative views of the future, and at secular as well as religious predictions for humankind's fate, asking always how our visions of the future, like a fun-house mirror, reflect in sometimes monstrous or exaggerated terms the concerns of the present.

HIS 186 History of Energy Resources and Utilization

HIS 187 Science, Magic, and the Occult from Antiquity to Newton
This course explores the early history of humans' attempts to explain and control the cosmos, taking into account the real contributions made to early science by areas of inquiry now dismissed as magic or superstition, such as astrology, alchemy, and "natural magic." One major theme of the course will be the continuing way in which societies have policed the boundary between
what they define as "magic" and what they dub legitimate "science." What is legitimate knowledge about nature, and who gets to define what counts as legitimate? The course will end around 1700, with Newton and the so-called "Scientific Revolution," and the marginalization of astrology, alchemy and similar fields of inquiry as "pseudo-sciences" or popular error.

HIS 188 SEX AND POWER

HIS 191 N/A

HIS 192 N/A

HIS 193 N/A

HIS 194 N/A

HIS 195 VIRT&VIRILE:HIS OF MANLINESS

HIS 196 N/A

HIS 197 IMAG THE FUTURE:HIS OF SCIFI

HIS 200 N/A

HIS 200W THE POLITICS OF SPORT

HIS 201 New Perspectives in Global History

Part I examines the origins of colonialism and “underdevelopment” in the global South as an outcome of the crisis in European feudalism, the rise of capitalism, and the Industrial Revolution in the global North. Progress in the North and not in the South were but two sides of the same process; a view of the North-South that remains largely unchallenged in the recent past, notwithstanding dramatic shifts in the world system during the same period. The dissolution of the Soviet Union, which has profoundly shaped international politics in the past two decades, has not by itself generated an alternative to this understanding of global history. Part II shows how the emergence of China, Brazil, India, and several other countries as economic power houses, competing for world resources and markets with the US-led global North, has not only altered the world’s living standards; it has also inspired new interpretations, rivaling the view that privileges social revolution in the fight for economic independence.

HIS 202 Health, Medicine, and Social Reform

Examination of the interconnected histories of medical science, public health, and political action promoting social and health reform, from the Scientific Revolution of the seventeenth century to the present. Attention will also be directed to improvements in health status, variations in the distribution of disease and risk, and changes in the social role of medicine and medical institutions. The material includes major primary sources: Frank, Engels, Virchow, Riis, Hamilton, Sigerist, Geiger. Secondary readings will include Rosen’s A HISTORY OF PUBLIC HEALTH, and Jones’ BAD BLOOD.

HIS 202W Health, Medicine, and Social Reform

HIS 203 Changing Concepts of Health and Illness

The long-term intellectual history of essential ideas in the Western medical tradition: illness, health, and mind/body interaction. The time span ranges from Greek antiquity to the present day, with emphasis on the last 250 years and on the relationship between emotional and biological factors in the onset and experience of disease. Primary sources include Hippocrates, Galen, Maimonides, Descartes, Gaub, Charcot, Freud, Alexander, Cannon, Engel. Secondary sources include Porter's THE GREATEST BENEFIT TO MANKIND: A MEDICAL HISTORY OF HUMANITY.

HIS 203W Changing Concepts of Health and Illness

The long-term intellectual history of essential ideas in the Western medical tradition: illness, health, and mind/body interaction. The time span ranges from Greek antiquity to the present day, with emphasis on the last 250 years and on the relationship between emotional and biological factors in the onset and experience of disease. Primary sources include Hippocrates, Galen,
HIS 204 History of International and Global Health
Examines the initiation, evolution, and transformation of international and global health activities/policies focusing on developments in the 19th-early 21st centuries. It also considers events such as pandemic plague, exchange of diseases between the Old World and the New, and the role of health concerns in early European and American colonialism and imperialism. The major focus is the evolution of cooperative efforts in international health under governmental, non-governmental, and trans-governmental auspices with attention given to the role of international conferences/conventions, the work of the International Red Cross and the Rockefeller Foundations International Health Division, and the creation/functioning of the Pan American Health Organization, the Office International d'Hygiene Publique, the League of Nations Health Organization, and the World Health Organization. For the later 20th century, we will focus on the World Bank, the Gates Foundation, UNAIDS, and other current players in global health.

Offered: Fall

HIS 204W History of International and Global Health
Examines the initiation, evolution, and transformation of international and global health activities/policies focusing on developments in the 19th-early 21st centuries. It also considers events such as pandemic plague, exchange of diseases between the Old World and the New, and the role of health concerns in early European and American colonialism and imperialism. The major focus is the evolution of cooperative efforts in international health under governmental, non-governmental, and trans-governmental auspices with attention given to the role of international conferences/conventions, the work of the International Red Cross and the Rockefeller Foundations International Health Division, and the creation/functioning of the Pan American Health Organization, the Office International d'Hygiene Publique, the League of Nations Health Organization, and the World Health Organization. For the later 20th century, we will focus on the World Bank, the Gates Foundation, UNAIDS, and other current players in global health.

HIS 206 Dangerous Texts: Literature and Politics in Russia
The course examines "dangerous texts" from the 17th c. to the present to see how texts and authors were seen as threats to the state and explores ways in which writers perceived themselves as a "second government" and how this affected their writing. Readings include Avvakum, Radishchev, Pushkin, Turgenev, Dostoevsky, Mandelstam, Solzhenitsyn, Voinovich, and Sinyavsky/Tertz.

HIS 206W Dangerous Texts: Literature and Politics in Russia
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HIS 208 Comparative Modern Revolutions: France, Japan, Mexico, Russia
In this class we will compare the French Revolution (1789-1815), the Japanese Meiji Revolution (usually called in English "the Restoration") of 1868-1890, the Mexican Revolution (1910-1924), and the Russian Revolution (1917-1937). We will examine such questions as: To what extent did particular social groups drive each of these revolutions? To what extent did each of these revolutions begin with a simple collapse of the state? Were new ideologies/ideas important in bringing on each revolution? How important were efforts "from below" and "from above" (i.e. by established elites and/or new state apparatuses) in determining the outcome of each revolution? Do modern revolutions tend to follow a common course, as Crane Brinton has argued, or are they 'sui generis'?

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HIS 209 Corruption and the Global Economy in Historical Perspective
This junior seminar offers students the opportunity to research and discuss the operation and consequences of widespread corruption in the global economy and the complex historical processes – economic, social, and political – which help to explain the phenomenon. To make the seminar a well-focused course, discussion will focus on country-case studies (with about three selected individuals in each country) that help to demonstrate the general pattern of causes and effects. A major issue to consider, among other things, is the role of cut-throat competition among global corporations and the effects of their corrupt activities on the quality of governance.

HIS 209W N/A

HIS 210 Africa Welcomes China in a New Global Economy
Part I surveys major areas of interaction between Africans and the Chinese from the end of WWII to the present. Initially, Africans found in China an ally in their struggles for liberation from European colonialism and Western imperialism. Beginning in the late 1980s, the ties broadened to include educational and cultural exchanges, economic aid, and especially trade and investment. Part II places the above connections in historical and global contexts. A global perspective invites students to see that from the perspective of China, the central features of its ties with Africa today are not structurally different from its dealings with other regions of the world. China has, for example, fueled its rapid economic growth with raw materials from every corner of the globe, including coal from the United States. Research also shows that Africans are acutely aware of the historical significance of China’s appearance on the global scene; the rise has given Africans a world of options they had never enjoyed before.
Offered: Fall Summer

HIS 210W Africa Welcomes China in a New Global Economy
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HIS 211 Guns, War, and Revolution in Southern Africa
This course explores the conditions that created the guerilla movements, the way the rebels and government forces clashed in the air, cities, and jungles, and how the struggles reshaped the history of the region and its position in the global economy before and after the Cold War.

HIS 211W Guns, War, and Revolution in Southern Africa

HIS 212 Africa's Sleeping Giant: Nigeria since the Islamic Revolution of 1804
In the context of the global economy, Nigeria, the most populous country in Africa, is blessed with vast mineral resources and agricultural lands able to produce a wide variety of tropical products and foods. The country's large population is made up of talented and highly resourceful individuals, who are quick to respond to economic incentives. Thus, it is hard to understand why the country has one of the lowest per capita incomes in the world and why the country's economy occupies such a lowly position within the global economy. We focus on the historical development of socio-economic/political structures over time to explain why the giant of Africa continues to slumber. Some of the country's central problems, such as ethnic and religious contradictions, are similar in some way to those in the U.S. The solutions attempted by the governments of both countries, such as affirmative action, are also somewhat similar. We will conduct a comparative analysis of contemporary historical issues in the two countries.
Offered: Summer

HIS 213 Natural Disasters and History in Africa

HIS 213W Natural Disasters and History in Africa

HIS 214 Narratives of Slavery Before and After Emancipation
HIS 215 N/A

HIS 217 N/A

HIS 221 20th Century European Thought
This course is an introduction to the main currents of European thought in the twentieth century—a century historian Eric Hobsbawm has rightly termed the “Age of Extremes.” Focusing on shifting and competing conceptions of selfhood and society, it will place modern European culture and the intellectuals who forged it within the context of the ordeals of two world wars; a host of revolutions (scientific, sexual, Bolshevik, fascist, and “velvet”); the Holocaust and Cold War; the collapse of European colonialism; and the expansion of American empire. We will center on French and German thought, but other regions of the modern European mind - British, Italian, Polish, Czech, émigré American - will also weigh in.

HIS 222 The Enlightenment

HIS 222W The Enlightenment
The Enlightenment - the structure of ideas typical of eighteenth century Europe and the Americas, shaped and was shaped by increasing globalisation and the clash of cultures between whites and indigenous peoples. Explosive questioning of religion, political justice and gender were also the consequence of these global encounters. The course is taught through establishing close relationships to primary text.

HIS 223 Barbarian Europe
Explores the cultures of northern Europe from the 5th c. BCE to the 10th c. CE.
Offered: Spring

HIS 225 Europe and the Great War, 1914-1918
This course is an introduction to the history of Europe during the First World War. After a preliminary look at the details of the conflict itself, we will be concerned mainly with the effect of the war on European culture, society, and consciousness. Class sessions to include both lectures, films, and regular discussions. Reading to include: Robert Graves, GOOD-BYE TO ALL THAT; Vera Britain, TESTAMENT OF YOUTH; Erich Maria Remarque, ALL QUIET ON THE WESTERN FRONT; the poems of Wilfred Owen, Siegfried Sassoon, and others; Alistair Horne, THE PRICE OF GLORY; and Paul Fussell, THE GREAT WAR AND MODERN MEMORY.

HIS 225W Europe and the Great War, 1914-1919
This course is an introduction to the history of Europe during the First World War. After a preliminary look at the details of the conflict itself, we will be concerned mainly with the effect of the war on European culture, society, and consciousness. Class sessions to include both lectures, films, and regular discussions. Reading to include: Robert Graves, GOOD-BYE TO ALL THAT; Vera Britain, TESTAMENT OF YOUTH; Erich Maria Remarque, ALL QUIET ON THE WESTERN FRONT; the poems of Wilfred Owen, Siegfried Sassoon, and others; Alistair Horne, THE PRICE OF GLORY; and Paul Fussell, THE GREAT WAR AND MODERN MEMORY.

HIS 226 Europe since 1945
What is Europe? Is it a definition of a geographical area, an economic entity, or is it a cultural formation? This course will examine both the historical development of European integration and more contemporary debates about the formation of the European Union. With an overview of both world wars and their impacts on European civilization and state system, the course will focus on the stages of European integration from the post-World War II period until now. With an introduction to the composition and role of the institutions in the EU system, its interaction with the national politics will be explored. Contemporary debates on the idea and exercise of the cultural integration of Europe will be paid special attention with comments on the European Union's expansion and future.

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composition and role of the institutions in the EU system, its interaction with the national politics will be explored. Contemporary debates on the idea and exercise of the cultural integration of Europe will be paid special attention with comments on the European Union's expansion and future.

**HIS 227** History of European Exploration
Exploration is examined as an integral part of European expansion into the rest of the world and of the opening of the U.S. in the eighteenth and nineteenth centuries. Three themes organize the course: Pacific exploration by James Cook; the opening of the American West by Fremont, Louis and Clark, and others; and the exploration of the Arctic by men working for Hudson Bay Company.

**HIS 227W** History of European Exploration

**HIS 229** England and Ireland since 1500
This course is an introductory survey of the tragically intermingled histories of England and Ireland from the end of the Napoleonic Wars to the present. Main topics include the effects of the Wars on England and Ireland; industrialization (and the lack thereof); class conflict in the 1830s and 40s; the Great Famine; the Irish emigration; Liberalism; Irish Nationalism and the IRA; the Depression; the two world wars, etc. Course consists of lectures, small-group discussions, and a few films.

**HIS 230** History from Myth: Topics Course

**HIS 230W** History from Myth: Topics Course

**HIS 231** The French Revolutions
The revolutions which took place in France and the rest of Europe in the 1780s and 1790s were brutal and explosive. They caused a discontinuity in time and the rhythms of ordinary life, but also produced ideas of government and the self which have cast a long shadow over today. Every social, economic and gender group was differently affected by what happened during this time of upheaval and chaos sparked by the collapse of the old monarchy. (Hence it makes some sense to talk about revolutions in the plural). Chairman Mao was once asked when he thought the French Revolution had ended "It's too soon to tell" he replied. The course proceeds through jokes, close documentary analysis, lectures and projects, and a corresponding look at whether it is indeed too soon to tell if the revolutions are over.

**HIS 231W** The French Revolutions

**HIS 232** Modern France
Alternately friends and rivals, modern France and the United States have had a complicated relationship ever since both nations were born in revolution at the end of the eighteenth century. This course will seek to understand France on its own terms by considering a series of formative events such as the Revolution of 1848, the Franco-Prussian War and the Paris Commune, the Dreyfus Affair and the birth of the intellectual, the very different experiences of World Wars I and II, the post-colonial conflicts in Algeria and Vietnam, the near-revolution of May 1968, and contemporary arguments over French foreign and domestic policy.

**HIS 232W** N/A

**HIS 233 (Arezzo)** Italy from Napoleon to the First Republic
The Italian peninsula has a history that goes back at least 2500 years. But the state of Italy, founded in 1861, is younger than the United States. At the intersection of these two facts lies the main theme of our journey from the Napoleonic invasion of Italy to the approval of the constitution of the Republic of Italy: the difficulty faced by the political leaders of united Italy in getting its citizens to identify with the Italian state. Historical accounts and documents, integrated with a selection of literary, operatic, and cinematic materials, constitute the main sources of information and analysis.

**HIS 234** Germany and Austria, 1800-1915
This course provides a thorough examination of state, society, and culture in Germany and Austria from the Napoleonic Wars to the outbreak of the First World War. It will begin with a brief consideration of the decades leading up to the central European revolutions of 1848, then will consider German Unification and the diverging, intersecting histories of the two most important states of Central Europe.
HIS 234W Germany and Austria, 1800-1915

HIS 235 Hitler's Germany, 1914-1946
This course covers the political, social, and cultural history of Germany from 1914-1945, with a postscript on Germany since the end of the Second World War. Central to the course is the effort to understand the rise, triumph, and fall of Hitler and the National Socialist party, regime, and ideology. We will pay particular attention to the differing experiences of various segments of the German population under democracy and then Nazism, including workers, women, and ethnic minorities, especially German Jews. Readings, lectures, and papers are designed to acquaint the student with the course subject matter and give practice in historical interpretation and reasoned argument.

HIS 235W Hitler's Germany, 1914-1946

HIS 236 The Holocaust
The course will focus on three aspects: 1) THE EVENT: Jews in Nazi Germany, the concentration camp; the Nazi ghetto; the death camps; uprising and resistance. 2) ANTECEDENTS: The historical development of Anti-Semitism and the nature of totalitarianism; German political and cultural history of the 19th-20th centuries; the place of the Jewish minority in Europe. 3) MEANING: Survival in theology, literature, and politics; theological and historical interpretations of the Holocaust; the problem of evil.

HIS 236W The Holocaust

HIS 237 Modern Germany, 1945-Present
This course examines the history of modern Germany since World War II. Starting with the end of the war, we will examine the process by which Germany was divided and the period of its division, tracing the histories and divergent characters of East and West Germany. We will then consider Germany's re-unification after 1989, subsequent controversies over the role Germany should take in international conflicts and the challenges of identifying a newly united Germany's place in an increasingly unified Europe, focusing on issues of immigration, national identity and citizenship. Course materials will include novels, films, memoirs, and historical accounts.

HIS 237W MODERN GERMANY

HIS 239 Totalitarianism and Everyday Life
In this course we will compare everyday life in the Soviet Union under Stalin, Nazi Germany, and Fascist Italy. Topics we will discuss include the extent and location of popular support for these regimes, ordinary people's survival strategies, mass consumption, state efforts to manipulate family life and their success or failure, and gender roles. We will also analyze the concept of "totalitarianism" and discuss its value (or lack thereof) as a heuristic device.
Offered: Fall

HIS 239W Totalitarianism and Everyday Life
Offered: Fall

HIS 240 History of British India
This course surveys the history of the Indian sub-continent from the coming of the British in the seventeenth century to its partition and independence in 1947. Course readings will emphasize the colonial experience and the results of colonial contact, especially as seen through changes in discourses, social structures, cultural norms, and collective identities. Readings will include essays, novels, and histories by both British and Indian writers. Class format will be a mix of lectures, discussions, and films.

HIS 240W History of British India
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HIS 241 China's Silk Road
The Silk Road, or Silk Route, is a series of trade routes through regions of the Asian continent connecting Chang'an (today's Xi'an) in China, with Asia Minor and the Mediterranean. It extends over 4,000 miles across land and sea. Trade on the Silk Road was a significant factor in the development of the great civilizations of China, Egypt, Mesopotamia, Persia, Indian subcontinent, and Rome, and helped to lay the foundations of the modern world. This course will examine the many civilizations that made up and communicated along these routes, from the eastward expansion of Alexander the Great in the 4th century BCE and the westward expansion of Han dynasty explorers in the 2nd century BCE into modern Tajikistan and Uzbekistan, to the expansion of the Mongol empire across China, Central Asia and Europe in the 13-14th centuries.

**HIS 242** The Culture of Zen

Zen Buddhism was the core around which many of Japan's greatest cultural achievements evolved. From the medieval period on, with its importation from China, the culture of Zen served as the primary context for much of Japanese metaphysics, architecture, landscape and interior design, medicine, ink painting, noh drama, haiku poetry, as well as the entire cultural complex known as the tea ceremony. Along with the Zen doctrinal and textual roots of these remarkable achievements, this course will examine the vibrant culture fostered in the medieval Zen monastic temple institution known as the Gozan and its dispersal into the culture at large.

**HIS 245** Tibet: History and Myth

Tibet: the rooftop of the world. The land of Tibet has occupied a contested zone between history and myth for hundreds of years, from a proud Central Asian empire to a Buddhist hermit kingdom guarded by fighting monks, and from a mystical Land of Snows to a militarized ethnic region of China today. In this class we will study the history of Tibet and the roles of neighbors like China and India in shaping that history. We will also explore how Tibet has become a cultural phenomenon, from legends of Shangri-La to Dalai Lama CDs to films like “The Golden Child” and “Seven Years in Tibet.” Careful reading and discussion will be crucial in this class as we wade through myths, political controversies, and even good, bad, and terrabad Hollywood movies in search of the historical Tibet.

**HIS 245W** Tibet: History and Myth

**HIS 247** The Korean War

The Korean War claimed over 3 million lives and led to the division of Korea, the isolation of China, and the rise of postwar Japan. In America, it helped push massive military buildup and McCarthyism. It was the first battlefield of the Cold War, the first jet war, and the first “limited war” whose battlefields---Chosin, Heartbreak Ridge, and Pork Chop Hill---taught Americans painful lessons that were all too quickly forgotten as the United States stumbled into Vietnam just over a decade later. This course covers modern Korean history, the role of Soviet and American intervention, China’s entry into the war, and the trauma of a Korean nation divided between North and South. Through history books, memoirs, and films, we will explore the lessons of the “Forgotten War” and the future of the Korean Peninsula.

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**HIS 248** The Samurai

SAMURAI: Swordsman---Servant---Warrior. Popular imagery portrays the samurai and their warrior code (Bushido) as the “soul” of Japan, and the samurai are as heavily romanticized as the knights of medieval Europe. But who were they, and were they really nobler than bloody killers? This course examines the origins of the warrior class in the 10th-11th centuries and its rise to power in the civil wars of medieval Japan. We will read books in Japanese history and literature to trace the peak and the end of the samurai age. We will also explore how the samurai have become a pop culture phenomenon, from the classic films of Akira Kurosawa to cult hits like “Rurouni Kenshin” and “Ghost Dog.” Careful reading and discussion will be crucial in this class to separate the real history from the popular myths.

Offered: Summer
HIS 248W The Samurai

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HIS 249 N/A

HIS 250 Economies and Societies in Latin America and the Caribbean since 1492

The main thrust of the course is an attempt to provide a historical explanation for the general problem of material poverty and the attendant socio-political crises that characterize contemporary Latin America and the Caribbean. The course begins with an examination of the organization of the economies and societies in the region on the eve of the European conquest, and the factors determining the level of development attained by this time. This is followed by a discussion of the socio-economic processes during the colonial period. The post-colonial period (which differs from one country to another) is examined in the context of the inherited socio-economic structures of the colonial period and the changing conditions in the evolving modern global system.

HIS 251 African Diaspora in Latin America

This upper-level seminar will analyze the arrival of over 6 million Africans to Latin America and their impact on the Portuguese and Spanish societies of the Western Hemisphere from 1500 to 1867. We will properly begin the study the African Diaspora in Latin America by studying the transition from Indigenous slavery to African slavery in Bahia, Brazil. The following weeks will cover the emergent demand for African laborers in the urban centers of Mexico, Colombia, Cuba and Peru. Throughout the class we will study the creative and creolizing cultural processes that accompanied the African presence in the region.

HIS 251W African Diaspora in Latin America

HIS 252 Immigration and the Americas

HIS 252W Immigration and the Americas

HIS 253 N/A

HIS 256 N/A

HIS 257 N/A

HIS 260 American Thought I: 1600-1865

This course is a survey of leading American ideas about God, nature, the self, society, and politics from the beginning of the seventeenth century through the mid-nineteenth century. Topics include Puritanism, the American enlightenment, the ideology of the American revolution, the ascendency of evangelical Protestantism, American romanticism, pro- and anti-slavery thought, and the cultural crisis of the Civil War. Readings from Jonathan Edwards, Benjamin Franklin, Thomas Jefferson, James Madison, Frederick Douglass, Abraham Lincoln, and others.

HIS 261 American Thought II: 1865-1990

This course is a survey of leading American ideas about God, nature, the self, society, and politics from the mid-nineteenth century to the end of the twentieth century. Topics include the challenge of secular modernism (and "post-modernism") to mid-nineteenth century Christian and Enlightenment certainties; the rise and fall of social-democratic liberalism and the criticism of its radical and conservative adversaries; the course of debates over cultural pluralism and feminism; and the resilience of anti-modern strains in American social thought. Primary source readings from figures such as Jane Addams, Daniel Bell, Edward Bellamy, Randolph Bourne, Judith Butler, John Dewey, W.E.B. DuBois, Milton Friedman, Charlotte Perkins Gilman, William James, Martin Luther King, Jr., Thomas Kuhn, Christopher Lasch, Walter Lippmann, Malcolm X, Reinhold Niebuhr, Charles Sanders Peirce, John Rawls, Richard Rorty, William Graham Sumner, Thorstein Veblen, and Michael Walzer.
HIS 263 American Culture since 1876
This course explores the values, assumptions, anxieties, and beliefs of Americans since the late nineteenth century. We will consider both "high" and "popular" cultural artifacts, ranging from literature to the movies, and explore such themes as: the tension between individualism and the quest for community; shifting attitudes toward technology; the impact of gender, race, and class on cultural expression; the search for viable American artistic traditions; and competing visions of social change.

HIS 263W American Culture since 1876

HIS 264 The Idea of America
WHAT IS AMERICA? A country? A continent? A political ideal? A culture? This course traces the development of ideas about America, from its historical beginnings to our own time, from European fantasies about the New World and its possibilities to the experiences of settlers and citizens facing its realities. We will explore the competing and even contending narratives of America in a wide variety of cultural documents, from orations, sermons and political tracts to novels, poems, photographs, and films. The course is open to all interested students and required for all American Studies majors.

HIS 266 The Arts in American Culture
Examines selected topics in American art and culture of the 19th and 20th centuries. A central concern will be the way in which images, especially paintings and photographs, gave shape to the ideas of what America was and what it meant to be American, as well as to the creation of an urban culture.

HIS 268 History of the American South, 1896-1946
Blue States! Red States! Why so many "red states" in the south? Why such a close attachment to family, religion, community? Why such a penchant for a distinct music, food, and sports culture? Why has the region been so long associated with social backwardness—violence, racism, and political conservatism? These and other characteristics (real or imagined) have roots that extend back to Europe and Africa while many are the result of more recent events—dating back only a few generations. This course will address these and other questions in the search of historical answer to the roots of southern peculiarities and the origins of those "Red States."

HIS 268W History of the American South, 1896-1946

HIS 269 The Civil War
The course suggests that there existed two distinct views as to how the new nation would be structured. Once these views clashed and became sectional, the nation was thrown into a political, theological, and, ultimately, a military contest the demands of which led to the incorporation of structural changes that had the effect of resolving the very issues that had propelled the nation into war. As we identify and discuss the causes, conduct, and consequences of the Civil War, we will examine the changing ideas about nation, government, work, race, and gender, and ask: How different were Northern and Southern institutions and, to what extent were northern and southern Americans fundamentally different people?

HIS 269W N/A

HIS 270 Progressive America
This course will examine the social, political, and cultural aspects of American Progressivism during the years 1890-1920. Among the topics of focus will be the movement's origins, its dominant strains of thought, its triumphs, and ultimate failure. In addition to providing a factual background of the movement and period, this course will assist students in developing and sharpening their reading, writing, and analytical skills.
Offered: Summer

HIS 271 America and the "Good War"
This course is a study of the impact of the Second World War on the politics, society and culture of the United States. It is not a military history course or a course on foreign policy, though we will briefly consider the military and diplomatic aspects of the war. The focus is on the consequences of total warfare for the political economy, social structure, and cultural life of the nation, and particularly on the effects of some of the most traumatic events of the war--the Holocaust, Japanese-American internment, the dropping of the atomic bomb--on the American moral imagination.
HIS 272  Spiritualism in America
The primary aim of this course is to explore the historical development and structural make-up of modern American Spiritualism. This course offers students a historical narrative that ranges from the early development of modern Spiritualism in upstate New York to current forms, such as African American Spiritual churches of New Orleans. In addition to this historical survey, the course examines major principles making up the framework of modern Spiritualism in America. Class format includes lectures, discussions, films, and field trips.

HIS 273W  Lincoln, Douglas, and American Freedom

HIS 274  History of Race in America
We will identify and discuss the salient moments in the nation's history when race functioned as an organizing principle in the construction of American public and private institutions. Course readings will examine the historical background of current debates on issues such as Affirmative Action, Diversity, Multiculturalism, Educational Testing, Reparations, the Media, and Political Party Re-alignment.

HIS 274W  History of Race in America
We will identify and discuss the salient moments in the nation's history when race functioned as an organizing principle in the construction of American public and private institutions. Course readings will examine the historical background of current debates on issues such as Affirmative Action, Diversity, Multiculturalism, Educational Testing, Reparations, the Media, and Political Party Re-alignment.

HIS 275  Economics of Discrimination
Economic development of African Americans during the twentieth century, with an examination of the economics of discrimination.

HIS 275W  Economics of Discrimination

HIS 276  American Movies in their Moment
Considers feature films as evidence for the cultural historian of modern America by considering the role of movies in the social imaginary of distinct moments in the nation's history. Topic for Spring 2016: "Surviving the Seventies." Movies include Deer Hunter, Godfather II, Nashville, Network, Star Wars, Taxi Driver.

Offered: Spring

HIS 278  The Seward Family's Civil War
A hands-on introduction to web-design and historical editing using the Papers of William Henry Seward (1801-1872), Governor of New York, US Senator, and Secretary of State under Abraham Lincoln during the Civil War. The Rush Rhees Rare Books, Special Collections, and Preservation Department holds the collection, which contains Seward’s public and private correspondence, and that of family members, including his wife, five children, and their extended family. The course will include background reading on the Civil War era, technical instruction on web design in a computer lab, transcribing, editing, annotating historical manuscripts using the original documents, and participation in construction of a website for a digital edition of the papers. This course is a prerequisite for HIS 320: Seward Family in Peace and War, and internships working on the Seward Family digital editorial project.

HIS 278W  The Seward Family's Civil War
A hands-on introduction to web-design and historical editing using the Papers of William Henry Seward (1801-1872), Governor of New York, US Senator, and Secretary of State under Abraham Lincoln during the Civil War. The Rush Rhees Rare Books, Special Collections, and Preservation Department holds the collection, which contains Seward’s public and private correspondence, and that of family members, including his wife, five children, and their extended family. The course will include background reading on the Civil War era, technical instruction on web design in a computer lab, transcribing, editing, annotating historical manuscripts using the original documents, and participation in construction of a website for a digital edition of the papers. This course is a prerequisite for HIS 320: Seward Family in Peace and War, and internships working on the Seward Family digital editorial project.

HIS 279  The Seward Family in Peace and War
A history class in the digital studies curriculum that assumes no background in either one. It is a hands-on introduction to the history of the family, gender, and the antebellum and Civil War eras, to historical editing, and to website design and creation, using the Papers of William Henry Seward (1801-1872), Governor of New York, US Senator, and Secretary of State under Abraham Lincoln during the Civil War. This semester, we will focus on the family's correspondence from the 1830s, when Seward was away in Albany much of the time, first as a state senator and then as the governor of New York. Topics include the cholera epidemic of 1832, romantic love, and household economy.

HIS 279W The Seward Family in Peace and War
A history class in the digital studies curriculum that assumes no background in either one. It is a hands-on introduction to the history of the family, gender, and the antebellum and Civil War eras, to historical editing, and to website design and creation, using the Papers of William Henry Seward (1801-1872), Governor of New York, US Senator, and Secretary of State under Abraham Lincoln during the Civil War. This semester, we will focus on the family’s correspondence from the 1830s, when Seward was away in Albany much of the time, first as a state senator and then as the governor of New York. Topics include the cholera epidemic of 1832, romantic love, and household economy.

HIS 280 Archaeology of Early America
This course introduces students to historical archaeology and uses archaeological sites, material culture, and architecture to investigate European colonization of the Americas. Topics include Euro-Indian contact, the transfer of European and African cultures to American shores, creolization and the emergence of distinctly American traditions, Atlantic connections, and how non-documentary sources help us understand the lives of African-Americans, Indians, and white settlers.

HIS 281 The Role of the State in Global Historical Perspective
The debate on the role of the state versus that of the free market in the socioeconomic process is as old as the history of political economy. We discuss what economists, political scientists, & economic historians characterize as the Washington consensus versus the Beijing consensus or the Asian model. This is followed by a discussion of the contributions of some notable thinkers — Adam Smith, Alexander Hamilton, Friedrich List, John Maynard Keynes, & Friedrich von Hayek. The greater part of the course deals with selected historical cases across the globe. The discussions are informed by a political economy conceptual framework, which helps to explain the politics and economics of state policy and the long-run historical processes that created the political & economic conditions. Students’ performance is based on three short essays (four typed pages each) presented to the class for discussion and thereafter revised for grading. No mid-term & final examinations.

Offered: Spring

HIS 282 Hispanic Architecture in the Viceroyalty of Peru
The viceroyalty of Peru was arguably the most important and extensive of the Spanish dominions in the Americas, and from the 16th century became the southern stage of one of the most complex and far-reaching architectural and urbanistic adventures in the history of the world. The European building traditions had to be adapted to the geographical, material, and cultural characteristics of the new territories, with technological and stylistic developments being incorporated from the original Andean civilizations and transformed during the process. Most of these innovations and modifications endure until present times in one form or another, and became a significant part of the construction of the mixed identity of the region.

HIS 283 Politics of Identity

HIS 283W Politics of Identity

HIS 284 History of the Body

HIS 284W HISTORY OF THE BODY

HIS 285 Digital History: Building a Virtual St. George's
Students will conduct guided research using a variety of software and historical sources to help create a Virtual Digital St. George’s – a 400-year-old town with approximately 250 properties and historic buildings. We will build multi-layer 2D and selective 3D computer models of the oldest town in English America (founded 1612). Work will include integrating different types of historical data into Excel or ArcGIS databases, independent research on specific buildings and property owners using digital newspaper archives, "building" individual 3D houses within the town using Sketch-Up, Maya, or Revit, reconstructing and...
furnishing historic house interiors using interior design software. Students with computer programming experience may develop mini-games or mobile devise apps to educate modern visitors to the town.

Offered: Summer

**HIS 285W** Digital History: Building a Virtual St. George's

Students will conduct guided research using a variety of software and historical sources to help create a Virtual Digital St. George’s—a 400-year-old town with approximately 250 properties and historic buildings. We will build multi-layer 2D and selective 3D computer models of the oldest town in English America (founded 1612). Work will include integrating different types of historical data into Excel or ArcGIS databases, independent research on specific buildings and property owners using digital newspaper archives, “building” individual 3D houses within the town using Sketch-Up, Maya, or Revit, reconstructing and furnishing historic house interiors using interior design software. Students with computer programming experience may develop mini-games or mobile devise apps to educate modern visitors to the town.

**HIS 286** Modern Italy through Film

**HIS 287** Ancient Medicine

**HIS 287W** N/A

**HIS 288** N/A

**HIS 288W** N/A

**HIS 289** N/A

**HIS 290** Ancient Christianity

The rise of early Christianity from a persecuted minority religious movement to the dominant religion of the Roman Empire.

**HIS 291** Christian History Part I

This course will examine the origin and evolution of Christianity, juxtaposing Christian belief and behavior with the historical environments Christianity existed in until 1500.

**HIS 291W** Christian History Part I

**HIS 292** The History of the Christian Church: From the Reformation to the Present

This course will focus on the relationship between Christianity and its social environments from the late Middle Ages to the modern world with special focus on the Reformation, enlightenment and present moment.

**HIS 292W** The History of the Christian Church: From the Reformation to the Present

This course will focus on the relationship between Christianity and its social environments from the late Middle Ages to the modern world with special focus on the Reformation, enlightenment and present moment.

**HIS 295** Jews in Italy: History, Society, and Culture

This Course will Explore the Jewish experience in Renaissance and early modern Italy with a special focus on Venice. Topics will include the institution of the ghettos, Jewish merchants and moneylenders, Jewish everyday life, the inquisition and the Marranos, and Jewish literature and the arts.

**HIS 297** The Reformation

On the 31st of October 1517 Martin Luther tacked 95 theological challenges to medieval Catholic beliefs on a cathedral door. Luther’s snowball led to the avalanche we call the Reformation. It permanently altered the western European world. Yet Luther was only a part of broad efforts to reform medieval Catholicism, many of which preceded Luther and many more would follow in the wake of his actions. Although related to problems in the church, the reform movement was also connected to complex economic, intellectual, and socio-political forces that were already at play. The purpose of this course is to examine what
happened and why. The course will be conducted as a seminar and will require active participation and short essays. This course is meant to mesh with the Ferrari Symposium in the Humanities scheduled for April 2013.

**HIS 298** Deep Thoughts with German Thinkers

**HIS 299** Archaeology Field and Research Methods
Using Smiths Island, Bermuda, as a historical laboratory, this course trains students in archival research and archaeological survey, excavation, and lab analysis techniques and prepares them for professional work as historical archaeologists. Students will also learn about Bermudian and Atlantic historical developments, trade relations, and slavery and the African diaspora since 1610. Participants will also be introduced to archaeological conservation, museum studies, and underwater archaeological techniques. No prior archaeology experience is necessary.

**HIS 299A** N/A

**HIS 300W** The History of Nature
This course explores the history of the idea and condition of nature from ancient times to the present. Drawing on contemporary historical scholarship as well as a range of thinkers and writers from Petrarch to Thoreau and beyond, we will study the many ways in which humans have thought about and treated the natural world around them and how the natural world has shaped human history in turn. Some background in history is recommended.

**HIS 301W** Modernity and Modernism: Topics Course
Topics course

**HIS 303W** International Human Rights
What does it mean to be human? What political, economic, religious, social, or sexual rights might be part of different people's working definitions? This course will look at both a) the historical development of conflicting theories of human rights and b) more contemporary debates about their ideal extent, their exercise, and their enforcement. Special topics will include debates over the meaning of the American and French Revolutions, the fight to design an International Declaration of Human Rights in the aftermath of World War II, the history of organizations such as Amnesty International, and the controversy around UN events such as the 1995 World Conference on Women in Beijing, the 2002 World Summit on Sustainable Development in Rio de Janeiro, and the 2000 and 2005 Millennium Summits in New York City.

**HIS 305W** Maritime Atlantic World
Study of European expansion into Africa and the Americas from the ages of Discovery to Revolution has taken many forms. Some pursued their investigations topically (slavery, migration, economic development, etc.) and others focused on particular colonies or regions. We shift the focus of inquiry to the Atlantic Ocean itself, as the geographic center of an expanding European world. Rather than treat the ocean as peripheral while studying the settlement of the Atlantic coast, we will be primarily concerned with activities that took place upon its watery face, delving into the lives of the tens of thousands of mariners who were catalysts in identity formation, migration, and economic development. Our focus will be on three topics: migration, (forced and free), maritime activities (seafaring, shipping, and fishing), and trade (how merchants did business and integrated regional economies). By the end, you will hopefully appreciate the centrality of the sea to the development of Africa, Europe, and the Americas.

**HIS 308W** The Global City
As of 2007, the majority of the world population has lived in cities. This course explores the development of global urbanism since 1945. Placing the global city in the historical context of urban settlement, we will focus on new forms of urban political and social organization, both formal and informal, as they have developed in the contemporary city. We will engage a range of complex policy issues confronting the global city, including issues of environmental and social justice, global markets and migrant labor, the infrastructural challenges of large-scale urban settlement, squatter communities and informal urbanism, and urban planning and governance.

**HIS 309W** The Mediterranean World, 1400-1800
As the meeting point between three continents—Africa, Asia, and Europe—the Mediterranean Sea has been a forum for conflict and acculturation for millennia. In the first part of this course, we will examine the work of historians who have understood the
Mediterranean as a region both set apart and unified by its geography and networks of exchange. We will then test these ideas by
taking a close look at issues of interconnectedness, boundary-crossing, and relations between Christians, Muslims, and Jews in
the Mediterranean world during the late medieval and early modern period.

HIS 314W N/A

HIS 317W N/A
Offered: Spring

HIS 319W N/A

HIS 320 N/A

HIS 320W Topics in Medieval History
Selected problems in the political, social, and intellectual history of the Middle Ages.

HIS 321W Topics in Early Modern European History

HIS 322W Topics in European Cultural History

HIS 323W World War II: Eastern Front
This course is centered on class discussion of the readings. There will be little lecture time. We will focus on the history of
the Soviet Union's struggle with Nazi Germany from 1941-1945, the largest and bloodiest military conflict in human history.
Readings will deal with the Holocaust, the history of military operations, the Red Army's "learning curve" in its battle with
the Wehrmacht, and everyday life on Nazi-occupied territory as well as the Soviet "home front." Viewing and discussion of
documentary and fictional films will be a significant part of the class.

HIS 330W War, Money, and Ordinary People
This course covers topics such as the changing nature of warfare, the lives of ordinary people, how the state attempted to control
their private lives. It also looks at the global world which had emerged along with the growth of national feeling.

HIS 331W Europe in 1215

HIS 332W Stalinism

HIS 334W The Soviet Union and the Cold War
This seminar, based around discussion of readings and a major research paper, will be focused on the Soviet side of the Cold
War, including the conflict's impact on Soviet culture, society, daily life, and the economy.
Offered: Spring

HIS 336W Nations and Nationalism

HIS 340W Modernity through East Asian Eyes
What is modernity? What does it mean in China, Japan, and Korea? These are vital questions---but let’s not be scared away just
because they seem abstract. We will seek answers together through history, literature, and film. Each week we will discuss a
theme (such as WAR, POWER, TIME, and RESISTANCE) through films and readings that help us see the puzzle one piece at
time. Our goal is to uncover how modernity has been experienced and pictured on the other side of the globe. In the process,
we may gain not only a better understanding of East Asia, but also of ourselves. Note: this seminar assumes at least some basic
knowledge of Asian history or society. Contact the instructor if you have not taken at least one course on Asia.

HIS 342W Rich China, Poor China
The modern Chinese state has been shaped by its efforts to tackle economic strains. Imperial China collapsed in the throes of
foreign imperialism and trade deficits. Republican China, being one of the few silver-standard countries in a gold-standard world,
ran out of luck in fighting inflation. Socialist China became obsessed with a self-reliant economy, and established a state industry at the costs of impoverishing the entire rural population. And today, while China holds gigantic foreign reserves and launches spectacular Olympics and space ships, social welfare and individual rights have receded into a dim future. After toiling for gross economic surplus, will the Chinese people finally be the masters that share the fortune of the state? Come join me in this century-long and still ongoing journey, and learn the story of modern China’s search for wealth and power.

**HIS 350W** Slavery in Latin America

**HIS 351W** Urban History of Latin America, 1850-present

**HIS 360W** American and the World to 1865

Surveys the historiography of colonial and antebellum America. Senior history majors may register by invitation only.

**HIS 361W** America and the World since 1865

Explores the major interpretations of American history from Reconstruction to the late 20th c. resurgence of conservatism. Senior history majors may register by invitation only.

**HIS 363W** American Culture in the Great Depression and World War II

**HIS 364W** The Black Family in Slavery and Freedom

Almost four hundred years of slavery and racial discrimination have taken a toll on the black family. Despite this, the family has demonstrated a remarkable resilience as it has adapted to the demands of both slavery and freedom. Today, however, as the number of black millionaires grows rapidly, poverty in the nation expands exponentially. The course readings, class discussions, and assignments will seek to explain the huge disparities in wealth within the black community, identify their origin, and examine the scholarly claims that the very future of the black family in America is at risk.

**HIS 366W** 18th Century Anglo-America

Readings on the history and historiography of 18th c. Great Britain, the European Empires, and North America from the Glorious Revolution through the American Revolution, adoption of the US Constitution, and the presidencies of George Washington and John Adams. The readings will address social, political, intellectual, and cultural issues, the history of slavery, race relations, religion, the environment, immigration, and American Indians.

**HIS 367W** Topics in Revolutionary America

**HIS 368W** American Culture at Mid-Twentieth Century, 1946-1975

The seminar addresses the central themes of American cultural life in the mid-twentieth century -- the growing importance of psychological explanation, the emphasis on remaking norms, and the difficulties in maintaining or find oneself. Among the issues considered are the contributions of Jews and African-Americans, abstract expressionism, the rise of youth as cultural producers, the new sexuality, and feminism.

**HIS 371W** Topics in 20th Century American Cultural History

This course concentrates on the cultural and intellectual ferment of the first twenty years of the twentieth century spurred by the growing acceptance of the idea that no single principle could account fully for diverse phenomena. In many fields of inquiry, the notion that there were many truths, many values, and many beauties challenged the way of the world. As a result, American cultural and intellectual life featured a sense that the world was not already made, that standards were not firm and fixed, that accepted hierarchies were not always valid, and that contingency and context mattered. Among the fields of inquiry we will address are popular culture, philosophy, political science, psychology, and anthropology.

**HIS 372W** Topics in 20th Century US History

**HIS 373W** American Health Policy and Politics

This course examines the formation and evolution of American health policy from a political and historical perspective. Concentrating on developments from the early twentieth century to the present, the focus of readings and discussions will be political forces and institutions and historical and cultural contexts. Among the topics covered are periodic campaigns for
national health insurance, efforts to rationalize and regionalize health care institutions, the creation of Medicare and Medicaid and the further evolution of these programs, the rise to dominance of economists and economic analysis in the shaping of health policy, incremental and state-based vs. universal and federal initiatives, the formation and failure of the Clinton administration’s health reform agenda, and national health reform efforts during the Obama administration.

HIS 375W Benjamin Franklin's America

HIS 377W Emergence of the Modern Congress
Through intensive reading and discussion, we will analyze the major institutional features of Congress, with an emphasis on historical development. We will examine the basic institutions of the House and Senate—committees, parties, leaders, and rules. In doing this, we will consider the rise of careerism, the seniority system, agenda-setting, electoral concerns, divided government, efforts at institutional reform, party polarization, gridlock, and the Senate filibuster.

HIS 378 Urban Change and City Politics
Through reading and research, this course examines major issues in urban politics, history, and sociology. This course is a seminar, intended for advanced undergraduates with a substantial background in the social sciences.

HIS 378W Urban Change and City Politics
Through reading and research, this course examines major issues in urban politics, history, and sociology. This course is a seminar, intended for advanced undergraduates with a substantial background in the social sciences.

HIS 380W The Visual Culture of Heritage and Identity
Cultural critic Stuart Hall has observed that Heritage is a discursive practice. It is one of the ways in which the nation slowly constructs for itself a sort of collective social memory. This upper level seminar will look at case studies of how people (through the collectivities of gender, ethnicity, race, or nation) construct visual narratives about the past. Among the topics for consideration are Holocaust memorials, Native American and Polynesian museums and cultural centers, African American quilt histories, and even individual artists projects of the last few decades (Judy Chicago, Fred Wilson, Silvia Gruner, José Bedia, and Jolene Rickard, among others). We will see how various constituencies have borrowed from what Arjun Appadurai has called a warehouse of cultural scenarios in order to construct a useable past that supplies what is needed in the present, irrespective of its relationship to the verifiable realities of the past.

HIS 382W Apocalypse Now...and Then: A History of Apocalyptic Thought
This seminar examines the history of beliefs about the end of the world in the western Judeo-Christian tradition. We will examine such topics as the birth of apocalyptic thought, the medieval development of various aspects of traditions about the End (such as the figure of Antichrist and millenarian traditions), millennial influences on the discovery and colonization of the New World, millennial movements of the last two centuries (such as the Millerites and the Mormons), and contemporary apocalyptic scenarios. A major theme of the course will be the flexibility of apocalyptic language, its ability to interpret various historical situations, and its power to move people to acceptance or action.

HIS 383W Disease and Society from Antiquity to the Present
What is the relationship between disease and the society in which it strikes? How do societies define disease, and how does culture affect the treatment of the sick? How have scholars written the history of disease? In this research seminar, students will explore such questions by examining interactions between disease and society in western cultures from antiquity through the present, at the same time pondering what this insight can tell us as we face the frightening prospect of new killers like Ebola and resistant strains of old diseases like tuberculosis. Throughout, the course will insist that the experience of disease is not simply a biological fact, but is conditioned by the culture in which we live.

HIS 384W The Family in History
Family history is a sub-field of study that grew over the past fifty years as an aspect of social and cultural history. During the first half of the semester, we will discuss shared foundational readings as students define their individual research project and present a proposal, bibliography, and thesis statement. All students will research and write two drafts of a primary-source based research paper in the range of 20-30 pages in length in addition to footnotes or endnotes and bibliography according to the Chicago Manual of Style. Students may, if they are interested, focus their research on the Seward Family Papers, of which a substantial
number of letters have been transcribed over the past two years. This documentary editing project draws on the correspondence of the Seward family of Auburn, New York during the period 1817-1872.

**HIS 390** Supervised Teaching
Individual instruction in the teaching of history under the supervision of a faculty member.
Offered: Fall Spring

**HIS 391** N/A
Offered: Fall Spring

**HIS 391W** Independent Study
Designed for junior and senior students who wish to pursue an independent reading program with a professor; required for honors program participants. Upper-level writing credit awarded if students prepare and revise an extended essay.
Offered: Fall Spring

**HIS 392W** PRACTICUM

**HIS 393** N/A
Offered: Fall Spring

**HIS 393W** Senior Project
For seniors writing an extended essay under faculty supervision. Upper-level writing credit awarded if students prepare and revise an extended essay.
Offered: Fall Spring

**HIS 394** Public History Internship
Experience in an applied setting supervised on site. Approved and overseen by a University instructor.
Offered: Fall Spring

**HIS 395** N/A

**HIS 395W** Independent Research

**HIS 398** Honors Research Seminar (2 credits)
A forum in which students can present preliminary versions of their theses and get critical feedback from both their student colleagues and the instructor.
Offered: Spring

**HIS 399** Advanced Archaeology Field and Research Methods
Using Smiths Island, Bermuda, and a historical laboratory, this course trains experienced archaeology students in advanced field and research techniques, which may include geophysical remote sensing surveys, recording and GIS manipulation of digital site information, advanced lab analysis and artifact identification methods, independent historical research focused on site-specific questions, and independent field supervision of site and/or test pit excavations, depending on the interests of students.

**HIS 399A** N/A

**HIS 400** The History of Nature
This course explores the history of the idea and condition of nature from ancient times to the present. Drawing on contemporary historical scholarship as well as a range of thinkers and writers from Petrarch to Thoreau and beyond, we will study the many ways in which humans have thought about and treated the natural world around them and how the natural world has shaped human history in turn. Some background in history is recommended.
HIS 401 Modernity and Modernism: Topics course
A study of selected topics in the history of modern thought and culture in Europe and the United States.

HIS 403 International Human Rights
What does it mean to be human? What political, economic, religious, social, or sexual rights might be part of different people’s working definitions? This course will look at both a) the historical development of conflicting theories of human rights and b) more contemporary debates about their ideal extent, their exercise, and their enforcement. Special topics will include debates over the meaning of the American and French Revolutions, the fight to design an International Declaration of Human Rights in the aftermath of World War II, the history of organizations such as Amnesty International, and the controversy around UN events such as the 1995 World Conference on Women in Beijing, the 2002 World Summit on Sustainable Development in Rio de Janeiro, and the 2000 and 2005 Millennium Summits in New York City.

HIS 405 Maritime Atlantic World
Study of European expansion into Africa and the Americas from the ages of Discovery to Revolution has taken many forms. Some pursued their investigations topically (slavery, migration, economic development, etc.) and others focused on particular colonies or regions. We shift the focus of inquiry to the Atlantic Ocean itself, as the geographic center of an expanding European world. Rather than treat the ocean as peripheral while studying the settlement of the Atlantic coast, we will be primarily concerned with activities that took place upon its watery face, delving into the lives of the tens of thousands of mariners who were catalysts in identity formation, migration, and economic development. Our focus will be on three topics: migration, (forced and free), maritime activities (seafaring, shipping, and fishing), and trade (how merchants did business and integrated regional economies). By the end, you will hopefully appreciate the centrality of the sea to the development of Africa, Europe, and the Americas.

HIS 408 The Global City
As of 2007, the majority of the world population has lived in cities. This course explores the development of global urbanism since 1945. Placing the global city in the historical context of urban settlement, we will focus on new forms of urban political and social organization, both formal and informal, as they have developed in the contemporary city. We will engage a range of complex policy issues confronting the global city, including issues of environmental and social justice, global markets and migrant labor, the infrastructural challenges of large-scale urban settlement, squatter communities and informal urbanism, and urban planning and governance.

HIS 409 The Mediterranean World, 1400-1800

HIS 414 N/A

HIS 417 N/A

HIS 419 N/A

HIS 420 Topics in Medieval European History
Selected problems in the political, social, and intellectual history of the Middle Ages.

HIS 421 Topics in Early Modern European History
Although most people in early modern Europe lived in rural settings, cities assumed new importance during this period. We will examine these cities as capitol cities for newly centralized empires and as engines of commerce while also considering how urban communities responded to challenges such as poverty, crime, demographic change, and social unrest. Through case studies including Venice, Amsterdam, London, Seville, and Constantinople, we will also explore how cities brought together elite values and the ‘culture of the street’ and thus played a key role in transitions from medieval to modern society.

HIS 422 Topics in European Cultural History
Novels, plays, music, dance, poetry, painting ... How can we use individual artistic creations as a way of learning about the politics, economics, social structures, and psychological attitudes of the past? This course will answer that question by focusing on a series of modern European examples from the French Revolution through the Second World War.
HIS 423 World War II: Eastern Front
This course is centered on class discussion of the readings. There will be little lecture time. We will focus on the history of the Soviet Union's struggle with Nazi Germany from 1941-1945, the largest and bloodiest military conflict in human history. Readings will deal with the Holocaust, the history of military operations, the Red Army's "learning curve" in its battle with the Wehrmacht, and everyday life on Nazi-occupied territory as well as the Soviet "home front." Viewing and discussion of documentary and fictional films will be a significant part of the class.

HIS 430 War, Money, and Ordinary People
This course covers topics such as the changing nature of warfare, the lives of ordinary people, how the state attempted to control their private lives. It also looks at the global world which had emerged along with the growth of national feeling.

HIS 431 Europe in 1215
Three events taking place in 1215 provide windows for close looks into the Medieval world of Western Europe. (1) The movement for a measure of control over the rapidly expanding royal power in England produced the Magna Carta. (2) The Fourth Lateran Council legislated important elements for the centralizing and papal-directed church and stimulated the creation of a theology to reach the laity more fully. (3) Poets began writing the vast prose cycle of Arthurian, chivalric romances that we know as the Vulgate or Lancelot-Grail cycle. In short, the course considers politics, law and constitutionalism in the growth of medieval monarchy, the centralizing clerical church and its relationship with the laity, and the world of Arthurian romance. We will take up each subject in turn before each student selects a theme within one of the topics for a research paper.

HIS 432 Stalinism
Analysis of Stalinism as a social system, focused on the 1930s.

HIS 434 The Soviet Union and the Cold War
This seminar, based around discussion of readings and a major research paper, will be focused on the Soviet side of the Cold War, including the conflict's impact on Soviet culture, society, daily life, and the economy.
Offered: Spring

HIS 436 N/A

HIS 440 Modernity through East Asian Eyes
What is modernity? What does it mean in China, Japan, and Korea? These are vital questions---but let’s not be scared away just because they seem abstract. We will seek answers together through history, literature, and film. Each week we will discuss a theme (such as WAR, POWER, TIME, and RESISTANCE) through films and readings that help us see the puzzle one piece at a time. Our goal is to uncover how modernity has been experienced and pictured on the other side of the globe. In the process, we may gain not only a better understanding of East Asia, but also of ourselves. Note: this seminar assumes at least some basic knowledge of Asian history or society. Contact the instructor if you have not taken at least one course on Asia.

HIS 442 Rich China, Poor China
The modern Chinese state has been shaped by its efforts to tackle economic strains. Imperial China collapsed in the throes of foreign imperialism and trade deficits. Republican China, being one of the few silver-standard countries in a gold-standard world, ran out of luck in fighting inflation. Socialist China became obsessed with a self-reliant economy, and established a state industry at the costs of impoverishing the entire rural population. And today, while China holds gigantic foreign reserves and launches spectacular Olympics and space ships, social welfare and individual rights have receded into a dim future. After toiling for gross economic surplus, will the Chinese people finally be the masters that share the fortune of the state? Come join me in this century-long and still ongoing journey, and learn the story of modern China’s search for wealth and power.

HIS 450 Slavery in Latin America

HIS 451 Urban History in Latin America, 1850-present

HIS 460 America and the World to 1865

HIS 461 American and the World since 1865
HIS 464 The Black Family in Slavery and Freedom
After a discussion of the Moynihan Report controversy and an assessment of the literature on the black family, the readings will investigate why and how stable black families were encouraged, and how they developed under slavery. The impact of factors such as economics, politics, religion, gender, medicine, and the proximity of free families, on the structure of the black family will be given special attention. In this way, the structure of the slave family on the eve of Emancipation, and its preparedness for freedom, will be tested and assessed. Students will be encouraged to identify persistent links between the "history" of slavery and the black family, and the development of social policy.

HIS 466 18th Century Anglo-America
Readings on the history and historiography of 18th c. Great Britain, the European Empires, and North America from the Glorious Revolution through the American Revolution, adoption of the US Constitution, and the presidencies of George Washington and John Adams. The readings will address social, political, intellectual, and cultural issues, the history of slavery, race relations, religion, the environment, immigration, and American Indians.

HIS 468 American Culture at Mid-Twentieth Century, 1946-1975
The seminar addresses the central themes of American cultural life in the mid-twentieth century -- the growing importance of psychological explanation, the emphasis on remaking norms, and the difficulties in maintaining or find oneself. Among the issues considered are the contributions of Jews and African-Americans, abstract expressionism, the rise of youth as cultural producers, the new sexuality, and feminism.

HIS 469 Benjamin Franklin's America

HIS 471 Topics in 20th Century American Cultural History
This course concentrates on the cultural and intellectual ferment of the first twenty years of the twentieth century spurred by the growing acceptance of the idea that no single principle could account fully for diverse phenomena. In many fields of inquiry, the notion that there were many truths, many values, and many beauties challenged the way of the world. As a result, American cultural and intellectual life featured a sense that the world was not already made, that standards were not firm and fixed, that accepted hierarchies were not always valid, and that contingency and context mattered. Among the fields of inquiry we will address are popular culture, philosophy, political science, psychology, and anthropology.

HIS 472 Topics in 20th Century US History

HIS 473 American Health Policy and Politics
This course examines the formation and evolution of American health policy from a political and historical perspective. Concentrating primarily on developments from 1932 to the mid-1990s, readings and seminar discussions focus on political forces and institutions and on historical and cultural contexts. Among the topics covered are periodic campaigns for national health insurance, efforts to rationalize and regionalize health care institutions, the creation of Medicare and Medicaid and the further evolution of these programs, the rise of dominance of economists and economic analysis in the shaping of health policy, incremental and state-based vs. universal and federal initiatives, and the formation and failure of the Clinton administration's health reform agenda.

HIS 475 When New York was the Wild West
This course explores New York’s history from Seneca settlement to Seneca Falls, using recent scholarship to consider Iroquois, Dutch, English, and American periods of history. Specific topics include New York City and its hinterland, the shift from Dutch to English rule, Slavery in New York City, British-occupied New York and the American Revolution in New York State, 18th and 19th century religious movements, the dynamics of frontier settlement, and the Erie Canal. Students will devise and write an original primary research paper on a particular aspect or period of New York history.

HIS 477 Emergence of the Modern Congress
Through intensive reading and discussion, we will analyze the major institutional features of Congress, with an emphasis on historical development. We will examine the basic institutions of the House and Senate—committees, parties, leaders, and rules. In doing this, we will consider the rise of careerism, the seniority system, agenda-setting, electoral concerns, divided government, efforts at institutional reform, party polarization, gridlock, and the Senate filibuster.
**HIS 478** The Seward Family's Civil War

A hands-on introduction to web-design and historical editing using the Papers of William Henry Seward (1801-1872), Governor of New York, US Senator, and Secretary of State under Abraham Lincoln during the Civil War. The Rush Rhees Rare Books, Special Collections, and Preservation Department holds the collection, which contains Seward’s public and private correspondence, and that of family members, including his wife, five children, and their extended family. The course will include background reading on the Civil War era, technical instruction on web design in a computer lab, transcribing, editing, annotating historical manuscripts using the original documents, and participation in construction of a website for a digital edition of the papers. This course is a prerequisite for HIS 320: Seward Family in Peace and War, and internships working on the Seward Family digital editorial project.

**HIS 479** The Seward Family in Peace and War

**HIS 480** N/A

**HIS 482** Apocalypse Now...and Then: A History of Apocalyptic Thought

This seminar examines the history of beliefs about the end of the world in the western Judeo-Christian tradition. We will examine such topics as the birth of apocalyptic thought, the medieval development of various aspects of traditions about the End (such as the figure of Antichrist and millenarian traditions), millennial influences on the discovery and colonization of the New World, millennial movements of the last two centuries (such as the Millerites and the Mormons), and contemporary apocalyptic scenarios. A major theme of the course will be the flexibility of apocalyptic language, its ability to interpret various historical situations, and its power to move people to acceptance or action.

**HIS 483** Disease and Society from Antiquity to the Present

What is the relationship between disease and the society in which it strikes? How do societies define disease, and how does culture affect the treatment of the sick? How have scholars written the history of disease? In this research seminar, students will explore such questions by examining interactions between disease and society in western cultures from antiquity through the present, at the same time pondering what this insight can tell us as we face the frightening prospect of new killers like Ebola and resistant strains of old diseases like tuberculosis. Throughout, the course will insist that the experience of disease is not simply a biological fact, but is conditioned by the culture in which we live.

**HIS 484** The Family in History

Family history is a sub-field of study that grew over the past fifty years as an aspect of social and cultural history. During the first half of the semester, we will discuss shared foundational readings as students define their individual research project and present a proposal, bibliography, and thesis statement. All students will research and write two drafts of a primary-source based research paper in the range of 20-30 pages in length in addition to footnotes or endnotes and bibliography according to the Chicago Manual of Style. Students may, if they are interested, focus their research on the Seward Family Papers, of which a substantial number of letters have been transcribed over the past two years. This documentary editing project draws on the correspondence of the Seward family of Auburn, New York during the period 1817-1872.

**HIS 485** N/A

**HIS 489** Archaeology Field and Research Methods

Using Smiths Island, Bermuda, as a historical laboratory, this course trains students in archival research and archaeological survey, excavation, and lab analysis techniques and prepares them for professional work as historical archaeologists. Students will also learn about Bermudian and Atlantic historical developments, trade relations, and slavery and the African diaspora since 1610. Participants will also be introduced to archaeological conservation, museum studies, and underwater archaeological techniques. No prior archaeology experience is necessary.

**HIS 491** Reading Course at the Master's Level

Individual, specialized reading courses; topics, relevant to student's program, chosen in consultation with faculty member. Offered: Fall Spring

**HIS 495** Research at the Master's Level

Graduate level research course for the M.A. level.
Offered: Fall Spring

**HIS 496** Extended Reading at the M.A.
Individual, specialized extended reading courses; topics, relevant to student's program, chosen in consultation with faculty member.
Offered: Fall Spring

**HIS 498** ARCH FIELD&RESEARCH METHODS

**HIS 499** ADV ARCH FIELD&RESRCH MTHDS

**HIS 500** Problems in Historical Analysis
This course addresses questions of interest to beginning graduate students in history. These may include: the history of the historical profession, styles of historical writing, relations between history and literature, ethno-history, and the functions of history as criticism and as social memory.
Offered: Fall Spring

**HIS 501** Worlds of Inquiry
Introduces students to the interests of the Rochester faculty, which fall into three spheres of inquiry -- the world of nations, which emphasizes the complications of government, nationalism, war, and power; the world of goods, which concentrates on commerce and trade, the supporting institutions and the consequence of various modes of production and consumption, and students will read a sequence of exemplary works in each world — works that will acquaint them with the rudiments of each sphere, the problems under investigation and some of the solutions offered.
Offered: Fall Spring

**HIS 502** N/A
Offered: Fall Spring

**HIS 503** N/A
Offered: Fall Spring

**HIS 510** Advanced Historical Studies

**HIS 512** Research in 19th Century American Intellectual History

**HIS 513** Readings in 20th Century American Intellectual History

**HIS 514** Research in 20th Century American Intellectual History

**HIS 520** Advanced Historical Studies

**HIS 530** Advanced Historical Studies

**HIS 590** Supervised Teaching in History
Individual instruction in the teaching of history under the supervision of a faculty member. For first-year Ph.D. students.
Offered: Fall Spring

**HIS 591** Reading Course at the PhD Level
Individual, specialized reading courses; topics, relevant to student's program, chosen in consultation with faculty member.
Offered: Fall Spring

**HIS 592** Independent Reading Course
Individual, specialized independent reading courses; topics, relevant to student's program, chosen in consultation with faculty member.
Offered: Fall Spring

**HIS 593** Assisting in History
Experience, under faculty supervision, in conducting discussion sections and examinations in undergraduate history courses.
Offered: Fall Spring

**HIS 595** Research at the PhD Level
Graduate level research course for the Ph.D. level.
Offered: Fall Spring

**HIS 595A** N/A
Offered: Fall Spring

**HIS 596** N/A
Offered: Fall Spring

**HIS 895** Continuation of MA Enrollment
Offered: Fall Spring

**HIS 897** Master's Thesis in Absentia
Offered: Fall Spring

**HIS 899** Master's Thesis
Offered: Fall Spring

**HIS 899A** N/A
Offered: Fall Spring

**HIS 899B** N/A
Offered: Fall Spring

**HIS 985** Leave of Absence
Offered: Fall Spring

**HIS 986V** FULL TIME VISITING STUDENT

**HIS 995** Continuation of PhD Enrollment
Offered: Fall Spring

**HIS 997** PhD Dissertation
Offered: Fall Spring

**HIS 997A** PhD Dissertation In-Absentia
Offered: Fall Spring

**HIS 999** PhD Dissertation
Offered: Fall Spring

**HIS 999A** Doctoral Dissertation in Absentia
Offered: Fall Spring

**HIS 999B** PhD Dissertation In-Absentia Abroad
Offered: Fall Spring

**IR 101 INTRODUCTION TO COMPARATIVE POLITICS**
Introduces the study of political science and comparative politics. Focuses on how citizens may be able to control public policies in different modern democracies.

**IR 106 INTRODUCTION TO INTERNATIONAL RELATIONS**
Introduces students to the wide range of issues that make up the study of international relations, including the workings of the state system, the causes of international conflict and violence, and international economic relations.

**IR 161 INTRO INTERNATIONAL POLITICS**

**IR 200 POLITICS OF AUTHOR REGIMES**

**IR 204 DICTATORSHIPS & DEMOCRACIES**

**IR 204W DICTATORSHIPS & DEMOCRACIES**

**IR 205 SUST DEVLP 21ST CENTURY**

**IR 206 AUTHORITARIANISM**

**IR 206W AUTHORITARIANISM**

**IR 216 POLITICAL POST COMMUNISM**

**IR 217 HOW COUNTRIES BECOME RICH**
Why are some countries rich and well-developed while other countries remain underdeveloped and poor? What role do political institutions, both domestic and outward-oriented, play in economic development? In this course we examine classic and contemporary answers to these questions, and consider evidence for competing explanations. We start with Adam Smith, and move through theories of dependency, import substitution, and export-based development. We conclude with contemporary theories on the connection between economic development and political institutions. We explore national economies from all continents, with special emphasis on countries outside the North Atlantic that have grown and developed, to varying extents, since World War II. (This course was formally titled States and Markets.)

**IR 217W HOW COUNTRIES BECOME RICH**

**IR 218 CHINA & ASIA: POL & ECON**

**IR 218W SUS DEV-DOES FORGN AID WORK**

**IR 219 DEMOCRACY IN LATIN AMERICA**

**IR 220 NON-STATE ACTORS IN WORLD POLITICS**
Crossing the boundaries between theories of international political economy, globalization, international business, and development, offers an introduction to the international political economy of multinational corporations and their interaction with governments.

**IR 222 POLITICS OF NEW EUROPE**
Analyzes the theory, history, and practice of preventive wars--wars fought to avoid negotiating in a position of weakness in the future.

**IR 225 POL & POLICYMAK IN DEV WORLD**
Analyzes the logic and practice of international negotiations. What strategies do states use? And, how can we learn from theory and history to advise current negotiators?

**IR 229 INT'L POLITICAL ECONOMY**

**IR 229W INT'L POLITICAL ECONOMY**

**IR 230 AMERICAN FOREIGN POLICY**
This course consists of two parts. First, we will discuss the optimal use of various foreign policy instruments, such as militarized and economic coercion, foreign aid, and multilateralism. Second, we will discuss the policy formation process, assessing the relative impact of the general public, interest groups, Congress, and the president. Game-theoretic models will appear throughout the course, but no prior background is assumed or required. Students are strongly encouraged to keep up with current events.

**IR 233W INTERNAL CONFLCT&INT'L INTRV**

**IR 234W COMPARATIVE AUTHORITARIANISM**

**IR 235 ELECTNS: DEMCRCY&DICTRSHP**

**IR 236 CONTENTIOUS POL&SOC MOVEMENTS**

**IR 238 POLCTCL ECON INTL MIGRATION**

**IR 238W POLCTCL ECON INTL MIGRATION**

**IR 239 INT'L ENVIRONMENTAL LAW**

**IR 239W GENDER & DEVELOPMENT**

**IR 248 ARAB-ISRAELI CONFLICT**
Introduces students to the contemporary politics of the Middle East from both comparative politics and international relations perspectives.

**IR 252 ETHNIC POLITICS**
Explores the growing literature on ethnic politics in the comparative politics and international relations sub-fields.

**IR 253 COMPARATIVE POLITICAL PARTIES**
Examines the nature of political parties and political competition across democracies in the developed and developing worlds.

**IR 253W COMPARATIVE POLITICAL PARTIES**
See description for IR 253.

**IR 255 INSTITUTIONS&UNDERDEVELOPMENT**
Examines film as the dominant form of political expression under state patronage, with examples from the Soviet Union, Nazi Germany, and, after World War II, from Poland, Hungary, Czechoslovakia, and the former Yugoslavia.

**IR 256 THEORIES OF COMPARATIVE POLITICS**
Introduces theories in the field of comparative politics. Leads to understanding how the national and international environment, the political culture, the political institutions and the choices of citizens and leaders affect political performance. Explains
democratization, stability, competition, citizen influence, and policy outcomes as consequences of the environment, culture and institutions--and human choices in these contexts.

**IR 256W THEORIES OF COMPARATIVE POLITICS**
See description for IR 256.

**IR 258 DEMOCRATIC REGIMES**
Why have some countries made a successful transition to democracy, while others have not? Why are some democracies more stable than others? Course offers a survey of the leading literature in comparative politics centered on the topic of democratization.

**IR 260 CONTEMPRY AFRICAN POLITICS**
From a socio-political perspective focused on Central Europe, analyzes the most dramatic and significant turning points in the Cold War, such as the Berlin Airlift in 1949 and the Polish Solidarity strikes in 1980, as well as survey internal and external actions and reactions across nearly five decades until the implosion of the entire communist system between 1989 and 1991.

**IR 260W CONTEMPRY AFRICAN POLITICS**

**IR 261 LATIN AMERICAN POLITICS**
Provides an introduction to political institutions and institutional reform in contemporary Latin America. Focuses on the emergence and functioning of key political institutions in Latin America, including the presidency, the legislature, the system of electoral rules, political parties, the judiciary, and the bureaucracy.

**IR 261W LATIN AMERICAN POLITICS**
See description for IR 261.

**IR 262 ELECTIONS: DEVELOP COUNTRIES**
Examines the implications of economic globalization for domestic and international politics.

**IR 262W ELECTIONS: DEVELOP COUNTRIES**

**IR 263 COMPARATV LAW & COURTS**
Examines courts from a comparative perspective, focusing on the question of judicial independence.

**IR 263W COMPARATV LAW & COURTS**

**IR 264 COMP POLITICAL INSTITUTIONS**
Examines political institutions and their implications for the behavior of political actors and their effects on social outcomes.

**IR 264W COMP POLITICAL INSTITUTIONS**

**IR 265 CIVIL WAR AND THE INTERNATIONAL SYSTEM**
Addresses the question of when and where civil wars occur and what their effects are domestically and internationally. Examines role played by external actors in civil war, such as financial support to governments or insurgents, armed interventions, and peacekeeping missions.

**IR 266 POLITICS OF THE EUROPEAN UNION**
Considers the past, present, and future of European integration, focusing on explanations of conflict and cooperation.

**IR 266W POLITICS INDIA & PAKISTAN**
IR 267 IDENTITY, ETHNICITY, NATIONALISM
Explores the concepts of identity, ethnicity and nationalism from a comparative perspective.

IR 268 INTERNATIONAL ORGANIZATION
Examines the effect of elections and electoral systems on economic outcomes as well as the converse, how economic variation influences elections and the choice of electoral systems.

IR 268W INTERNATIONAL ORGANIZATION

IR 270 MECHANISMS OF INTERNATIONAL RELATIONS
Examines causal mechanisms for understanding international relations, studying several substantive themes, such as the "democratic peace," ethnic conflict, and international trade.

IR 270W MECHANISM FOR INTL RELATIONS
See description for IR 270.

IR 271 RUSSIA AND EASTERN EUROPE: POLITICS AND INTERNATIONAL RELATIONS
Surveys the politics and international relations of the region in the second half of the twentieth century, devoting roughly equal attention to the Cold War and post-Cold War periods.

IR 273 POLITICAL ECONOMY OF EAST ASIA
Focuses on three East Asian countries--China, Japan, and South Korea--from the perspective of international political economy. Examines the postwar developmental strategies of these countries and how the globalized world economy has transformed their state-led economies.

IR 274 INTERNATL POLITICAL ECONOMY
Explores the interaction between politics and economics at the international level as well as between the international and domestic levels, involving various actors such as governments, interest groups, and multinational corporations.

IR 276 POLITICS OF INSURGENCY AND TERRORISM
 Discusses the logic of asymmetric conflicts between states and non-state actors. Examines the military, political, and social factors that determine when and where asymmetric warfare is likely to occur.

IR 276W POL INSURGENCY & TERROR
See description for IR 276.

IR 278 FOUND MODERN INTL POLITICS

IR 279 WAR AND THE NATION STATE
Examines the development of warfare and the growth of the state from the French Revolution to the end of the Second World War. Further examines the phenomenon of war in its broader socio-economic context, focusing on nationalism, bureaucratization, industrialization and democratization.

IR 279W WAR & THE NATION STATE
See the description for IR 279.

IR 280 POLITICS & ECONOMY OF CHINA
Provides an introduction to the post-war political and social history of Eastern Europe from the establishment of the Communist regime until the present.

IR 280A COMMUNISM AND DEMOCRACY IN EASTERN EUROPE
Offered on location in Krakow. The course focuses on historical, political, economic and social dimensions of the major processes that have taken place in Poland and other European countries since the 1980s. The discussion will touch upon the communist system and its collapse, the economy in transition, and social changes in post-communist countries. The focal point of the discussion is Poland. Other countries, most notably Russia and the Czech Republic, will be used for comparative purposes.

**IR 286 POL ECON OF DEVl COUNTRIES**

**IR 289 STATE ROLE GLOBAL PERSP**

**IR 373 TERRITORY & GROUP CONFLICT**
Examines a long neglected topic: the role of territory in group politics. BuildS a basic understanding of why, when, how and which territory becomes contested.

**IR 391 INDEPENDENT STUDY**

**IR 391W INDEPENDENT STUDY**

**IR 393 SENIOR PROJECT**

**IR 393W SENIOR PROJECT**
A year-long research project supervised by a faculty member in the department and culminating in a written work.

**IR 394 INTERNSHIP**

**IR 395 INDEPENDENT RESEARCH**

**IR 397 EUROPEAN POLITICAL INTERNSHIP**
Internships are available for students in Edinburgh, London, Brussels, Bonn, Berlin and Madrid. Internships are in English in Edinburgh, London, and Brussels; students need proficiency in the language for the latter three placements.

**IT 100A BEGINNING ITALIAN IN AREZZO**

**IT 101 ELEMENTARY ITALIAN I**
The objective of the course is to provide beginners with a thorough grounding in all language skills: listening, speaking, reading and writing. Emphasis is placed on both grammar and cultural information. Classes meet five times a week and combine language theory and practice. Each class is fifty minutes long. Students must sign up for both a MWF and a TR block. As far as Italian is concerned, the terms 'lecture' and 'recitation' conventionally used to identify the blocks have a purely bureaucratic significance and do not reflect in any way the pedagogical approach of the course.

**IT 102 ELEMENTARY ITALIAN II**
Continuation of IT 101. The objective of the course is to provide beginners with a thorough grounding in all language skills: listening, speaking, reading and writing. Emphasis is placed on both grammar and cultural information. Classes meet five times a week and combine language theory and practice. Each class is fifty minutes long. Students must sign up for both a MWF and a TR block. As far as Italian is concerned, the terms 'lecture' and 'recitation' conventionally used to identify the blocks have a purely bureaucratic significance and do not reflect in any way the pedagogical approach of the course.

**IT 111 ELEMENTARY ITALIAN (AREZZO)**
The course offers an introduction to basic grammar with intensive training in speaking, listening, reading, and writing. It also guides students in the process of observation, experimentation, and discovery of the culture. Students' assignments often involve interacting with Italians. Sports events, movies, and other 'surprise' events are scheduled to complement the course.

**IT 114 CONVERSATIONAL ITALIAN**
Conversation course designed to help students with some knowledge of Italian grammar develop facility with the spoken language. Emphasis on vocabulary-building. Class time devoted to debate, discussions, and conversations about current topics and aspects of contemporary Italian culture. Themes for discussion both extemporaneous and planned. Students are expected to prepare for the assigned themes in advance. Recommended in conjunction with any Italian course, except for IT 101, for extra oral practice. May be taken twice.

**IT 150 (AREZZO) CULTURE IN CONTEXT**
This course focuses on the cultural experiences involved in living and studying for a semester in Arezzo. Activities consist of learning how to make – and then savor – local foods, encountering traditions, practicing tandem-speaking with Italian university students, participating in international workshops and city sponsored events. Visits to industrial and agricultural sites are included.

**IT 151 INTERMEDIATE ITALIAN I**
The purpose of Intermediate Italian 151 is that of perfecting the learning of the structure of the language in order to acquire proficiency in all its four skills: reading, speaking, listening and writing. While reviewing and re-learning the language as a whole, we will touch upon contemporary cultural issues of Italy and of her people.

**IT 152 INTERMEDIATE ITALIAN II**
Continuation of IT 151. The aim of the course is to reinforce the student's reading, writing, listening and speaking skills in a meaningful cultural context. This objective is achieved through both a systematic study of the fundamentals of grammar and the analysis of a variety of cultural materials. Topics for study, writing practice, and discussion include literature, history and popular culture.

**IT 153 ACCELERATED ITALIAN (AREZZO)**
The course enhances comprehension and communication skills as well as knowledge of Italian grammar. Emphasis is on reading, vocabulary building, and perfecting oral and written skills.

**IT 160 THE NEW EUROPE**

**IT 161 EUROPE TODAY**

**IT 196Q DANTE'S DIVINE COMEDY II**
This course is the second segment of a two-semester sequence on the Divine Comedy. The purpose of the sequence is to introduce students interested in the liberal arts to one of the most significant texts in Western civilization. While reading about Dante's adventurous journey from Inferno to Paradise, students will gain a perspective on the Biblical, Christian, and Classical traditions, and on the political, literary, philosophical, and theological dimensions of medieval European culture. The sequence will also provide students with an avenue of investigation on the problem of knowledge --one of the poem's central concerns-- and guide them in developing critical tools and research skills. This course will consist on a close reading of the second part of Purgatory and of Paradise. Lectures and class discussion will be complemented by a weekly recitation session.

**IT 197 THE DIVINE COMEDY OF DANTE ALIGHIERI: Discover the Wonders of a Medieval Mind**
The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from literature to history, from politics to government, from philosophy to theology. Lectures and class discussion will be complemented by a weekly recitation session. Intensive class participation is encouraged. No prerequisites.

**IT 197Q DIVINE COMEDY OF DANTE ALIGHIERI**
The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern
ranging from literature to history, from politics to government, from philosophy to theology. Lectures and class discussion will be complemented by a weekly recitation session. Intensive class participation is encouraged. No prerequisites.

**IT 200 ADVANCED ITALIAN COMPOSITION AND CONVERSATION**

Designed for students who already have a basic knowledge of spoken and written Italian, this course addresses different aspects of modern and contemporary Italian culture emphasizing, at the same time, the usage of Italian language. Topics may include politics, economics, mass media, intellectual life, education, popular culture: as well as the ethnic, economic, and cultural relations between Italy and Eastern Europe, Asia, Africa, the European Community, and the United States. Since the specific topic of the course varies each year and the course is typically taught by a different visiting professor from the University of Siena/Arezzo, Italy, IT 200 may be taken more than once. The course meets three times a week and coincides for two thirds with IT 124. Language of Instruction: Italian and English.

**IT 202 INTRO TO ITALIAN CULTURE**

**IT 207 INTERMED IT IN ITALY-AREZZO**

An intensive, intermediate level language and culture course taught in the historic city of Padova, Italy. Students live in families and experience four weeks of full immersion in Italian life. Classes meet five times a week in the morning for three hours a day. Cultural excursions to Venice, Verona, Florence, and other cities are an integral part of the program.

**IT 211 DANTE'S DIVINE COMEDY II**

The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from literature to history, from politics to government, from philosophy to theology. Class format includes lectures and discussion. Intensive class participation is encouraged. No prerequisites.

**IT 222 BOCCACCIO'S DECAMERON**

The course aims to study the Decameron as a book of love that draws its inspiration from Dante's story of Paolo and Francesca in the Fifth Canto of Inferno; as a secular text that defies major conventions of medieval writing; as a social commentary on institutions, social classes, and power structures; as a reflection on the interplay between aesthetics and other medieval cultural codes and traditions such as medicine, law, patristics, economics, ethics, and courtly love. Illustrations, visual interpretations, and potential for theatrical adaptations of the text are included in the discussion.

**IT 223 MONUMENTS OF ANCIENT ITALY: HISTORY, STRUCTURE, FORM (taught in Arrezzo Italy)**

The course studies the archaeology and architecture of buildings in ancient Italy from the fifth century BC to the fourth century AD, adopting a multidisciplinary approach based on archeological evidence, technical and functional aspects, and historical significance. Classes are taught on location and focus on the most relevant monuments and archeological sites in central and southern Italy, including Rome, Ostia Antica, Pompeii, Herculanenum, Baia, and Paestum. The course is divided into three parts: (1) structural design and technical issues related to ancient monuments, (2) monuments of Etruscan Italy and Magna Grecia, and (3) Roman monuments.

**IT 224A Topics in Italian Culture: Create a Documentary, Recreate the Medieval World**

Selected topics in Italian culture taught by the visiting instructor from Arezzo, Italy.

**IT 224B Topics in Italian Culture: Mediating Culture Through Video: Subtitling and Voiceover**

Selected topics in Italian culture taught by the visiting instructor from Arezzo, Italy.

**IT 225 DIVINE COMEDY OF DANTE ALIGHIERI**

The course approaches The Divine Comedy both as a poetic masterpiece and as an encyclopedia of medieval culture. Through a close textual analysis of selected cantos from Inferno, Purgatorio, and Paradiso, students learn how to approach poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the world. They also gain a perspective on the Biblical, Christian, and Classical traditions as they intersect with the multiple levels of Dante's concern ranging from
literature to history, from politics to government, from philosophy to theology. Class format includes lectures and discussion. Intensive class participation is encouraged. No prerequisites.

IT 228 (AREZZO) ITALY FROM NAPOLEON TO THE FIRST REPUBLIC
The Italian peninsula has a history that goes back at least 2500 years. But the state of Italy, founded in 1861, is younger than the United States. At the intersection of these two facts lies the main theme of our journey from the Napoleonic invasion of Italy to the approval of the constitution of the Republic of Italy: the difficulty faced by the political leaders of united Italy in getting its citizens to identify with the Italian state. Historical accounts and documents, integrated with a selection of literary, operatic, and cinematic materials, constitute the main sources of information and analysis.

IT 229 PHILOSOPHY OF ART

IT 244 ART, ARCHITECTURE, AND LITERATURE IN THE AGE OF DANTE AND BEYOND (AREZZO)
When we look at works of art in museums, galleries, and churches we are, in most cases, looking at them out of context. Furthermore, when we look at early Renaissance paintings we do not see them through the eyes of the people who produced them or for whom they were produced. We have to learn to see them as they might have been seen. We can begin to do this by learning how to read and to interpret the complex elements at play beneath the immediate surface by setting the artist, his work, and his public in their social and religious historical contexts, and by exploring the universal unspoken language of signs and symbols used by artists. The course content is based on painted forms, i.e., panels, canvases, and frescos from the Trecento and Quattrocento with an emphasis on Tuscan painting. The selection, as far as possible, takes advantage of the availability of works in churches, museums, and galleries within easy visiting distance of Arezzo.

IT 245 DANTE: A MULTIMEDIA LAB
Dante’s Comedy has never ceased to inspire the visual arts, music, theater, cinema, and other manifestations of popular culture. Western art is a repository of artistic representations of biblical and classical traditions arguably pertinent to his text. The Comedy evokes the historical and geographic reality of Dante’s world still there to be interrogated. Privileging the visual arts and the illustrations of the poem, students participating in this experimental workshop assess the scope of this visual “territory”; develop analogical thinking by using the Comedy as a source for associations of ideas and imaginative comparisons; find art images in books, museums, and internet, and research on artist, time period, and style; practice analytic thinking by arguing for the significance of images in themselves and in relation to Dante’s text; contribute original entries to the Commedia Portal, a student-designed digital companion to the Comedy. Prerequisites: one UR Dante course or permission of instructor.

IT 246 VENICE AND THE JEWS

IT 247 POLITICS AND CULTURE IN FASCIST ITALY
Interviewed by the Chicago Daily News in 1924, Mussolini said that Fascism was “the greatest experiment in history in making Italians.” Within the historical and political framework of the so-called Ventennio Fascista—from 1922 to 1943—the course examines Mussolini’s cultural politics as a fundamental strategy not only to gain popular consent and propagate the ideology of the regime, but to implement his vision of Italian national identity. Relying on both material culture, and historical documents and analyses, we will study the fascist philosophy and politics of education, the myth of Rome and its imperial legacy, the archeological, architectural, and restoration projects, the graphic arts, fashion, sports, and documentary film.

IT 248 MODERN ITALY THROUGH FILM
Taking the inspiration from Martin Scorsese’s anthological film My Voyage to Italy, the course focuses on a few momentous episodes and phenomena of Italian political, social, and cultural history as portrayed and interpreted in film. We will discuss aspects of Risorgimento, Fascism, the World Wars and their aftermath, the culture of individual cities, the contrast between North and South, the condition of women, emigration and immigration, power and repression, spirituality, and secularism. Among the major film directors, we will include Rossellini, Visconti, Fellini, Olmi, and Bertolucci. The analysis of the movies will be integrated with readings from the fields of history, literature, criticism, and theater. A glance at Verdi’s operas in the Nineteenth Century and at the tradition of social song as it develops in the post war period will complement the course. This course is complementary to HIS 228 offered in Arezzo.

IT 390 SUPERVISED TEACHING

IT 391 INDEPENDENT STUDY
IT 391W INDEPENDENT STUDY

IT 392 PRACTICUM

IT 393 SENIOR PROJECT

JPN 101 ELEMENTARY JAPANESE I
STUDENTS MUST REGISTER FOR BOTH LECTURE AND RECITATION. Designed to help beginners acquire a basic command of Modern Japanese. The classes will be conducted in English for the grammar lecture, recitation in Japanese. In the beginning, students will master “Hiragana and Katakana” writing systems. As the course progresses “Kanji” Chinese characters will also be introduced. Classes emphasize reading, writing, listening and speaking. Requirements include regular assignments, quizzes, Lesson Tests and final Exam. Textbook: (1) Genki I: An Integrated Course in Elementary Japanese, by Eri Banno Yutaka Ohno, et.al. (The Japan Times) (2) Course Workbook by Shino 6 credits.

JPN 102 ELEMENTARY JAPANESE II
Sequel to JPN 101. STUDENTS MUST REGISTER FOR BOTH LECTURE AND RECITATION. Lecture and recitation designed to help the students at the late beginning level acquire a practical command of modern Japanese in all areas. Although the main emphasis is still on speaking and listening, the students will have more opportunities for writing than in JPN 101. The classes will be conducted in both Japanese and English. The students will master, among other things, “keigo” (polite language), female vs. male speech style, and “direct” style verbals. Textbook: (1) Genki I: An Integrated Course in Elementary Japanese, by Eri Banno Yutaka Ohno, et.al. (The Japan Times) (2) Course Workbook by Shino 6 credits.

JPN 114 INTERMEDIATE CONVERSATIONAL JPN
Emphasis on speaking skills with focus on current issues in Japanese culture and society. May be taken concurrently with JPN 151 or JPN 152. This is a two-credit course which may be taken twice for credit.

JPN 151 INTERMEDIATE JAPANESE I

JPN 152 INTERMEDIATE JAPANESE II
Sequel to JPN 151. Lecture and recitation designed to help the students at the (late) intermediate level acquire a practical command of modern Japanese in all areas. Although speaking and listening will remain the main skills to be worked on, the amount of reading and writing will continue to be increased. The classes will be conducted all in Japanese except in the grammar lecture. Text: “Japanese for Everyone” by Susumu Nagara (Gakken). This course covers L.18-L. 27.

JPN 202 ADVANCED INTERMEDIATE JAPANESE I
This course aims at the improvement of students' overall proficiency in the Japanese language. Listening and speaking skills will be improved through assignments based upon audio tapes, discussion, and role-playing in Japanese. Reading skills will be improved through reading of various “raw” materials. Class taught in Japanese.

JPN 203 ADVANCED INTERMEDIATE JAPANESE II
This course aims at further improvement of student’s overall proficiency in the Japanese language. Students will start learning colloquial speech style used heavily among family members and/or close friends through the video program based on a Japanese TV drama. Reading skills will be improved through reading various “raw” materials. Essay assignments will be given to students regularly in order to brush up their writing skills. Requirements include unit quizzes, oral quizzes, a comprehensive final and some other little quizzes such as vocabulary tests. Class taught in Japanese.

JPN 204 ADVANCED CONVERSATIONAL JAPANESE
Provides students of JPN 202 level or higher with the opportunity to improve their speaking skills. Class activities include discussion of current issues and oral drills. The class will be conducted in Japanese, and is not intended for students who have already acquired near-native fluency.

JPN 205 ADVANCED JAPANESE I
This course covers various aspects of contemporary Japanese culture as found in magazines, journals, television, film and videos. Class taught in Japanese.

**JPN 205W ADVANCED JAPANESE I**
This course covers various aspects of contemporary Japanese culture as found in magazines, journals, television, film and videos. Class taught in Japanese.

**JPN 206 ADVANCED JAPANESE II**
Readings in Japanese in fiction and essays by popular Japanese writers. A video program based on a popular Japanese cartoon will enhance students' ability to understand different speech styles adopted by people at various social levels. Class taught in Japanese.

**JPN 206W ADVANCED JAPANESE II**
Readings in Japanese in fiction and essays by popular Japanese writers. A video program based on a popular Japanese cartoon will enhance students' ability to understand different speech styles adopted by people at various social levels. Class taught in Japanese.

**JPN 207 FILM AS OBJECT**
The tangible object at the origin of the onscreen image: the social, cultural and historical value of motion pictures and national film cinemas through an understanding of "Film" as an organic object.

**JPN 210 TRAD JAPANESE CULTURE**
An overview of Japan's traditional culture through the most prominent examples of it visual, literary, and performing arts, with attention to the social contexts of aesthetic experience and to ideas of a "national culture." Taught in English, additional work available in Japanese where appropriate.

**JPN 210W TRAD JAPANESE CULTURE**
An overview of Japan's traditional culture through the most prominent examples of it visual, literary, and performing arts, with attention to the social contexts of aesthetic experience and to ideas of a "national culture." Taught in English, additional work available in Japanese where appropriate.

**JPN 211 Modern Japanese Literature in Translation**
This course will consider modern Japanese literature through a chronological look at a variety of novels, short stories, and essays from the late 19th century to present day. While we will devote considerable time to the canonical writings of Natsume Sōseki, Tanizaki Jun'ichirō, Ôe Kenzaburō, and Murakami Haruki—authors who are in many ways synonymous with Japanese literature itself—equal attention will be given to writers yet under-appreciated and under-analyzed. Through a combination of lectures and discussions, we will study not only the texts and authors, but also issues of gender, race, psychology, sexuality, morality, and history as they relate to the Japanese literary corpus. A selection of shorter fiction and a few novels will be available in English translation and students need not be familiar with Japanese.

**JPN 211W MODERN JPN LIT IN TRANS**

**JPN 212 Godzilla, Gundam, and Gangsters: Japanese Popular Culture**
In this multimedia course, we will examine a range of Japanese popular culture, including anime, manga, film, literature, and fashion. Through this exploration we will extend our understanding of Japanese cultural artifacts. But we will also use popular culture in Japan as a springboard for discussing pressing social issues such as gender, class, sexuality, nationalism, and consumer culture. Our goal is to rethink Japan through an investigation of popular culture, and to become attune to the mechanisms that have shaped and continue to shape Japan—its culture, its society, its place in the world. Class time will be devoted to lectures, discussions, and writing exercises.

**JPN 212W JAPANESE POPULAR CULTURE**

**JPN 213 HIST & STRUCT OF CHI & JPN**

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University of Rochester
It is well known that Chinese civilization was central to the broad historical development of East Asian cultures including that of Japan, a relationship that might suggest that of ancient Hellenic Greek and Italic Latin. While much of Japan’s vocabulary and its writing system are rooted in Chinese, however, it is less well known that Chinese and Japanese belong in fact to two entirely unrelated language families, Sinic and Japonic. This course examines the linguistic structures, historical development and interactions of the two languages. Course topics include: theories of origins and language-family affiliations; the historical development of phonological and grammatical features; the development of writing systems; and the complex role played by language in cultural influence and interaction.

JPN 214 ATOMIC CREATURES: GODZILLA
Origins and development of the Japanese kaiju eiga (monster film): nuclear imagery and the science fiction/horror/creature film genre.

JPN 215 MODERN JAPAN
The course will focus on the modern history of Japan from 1850 into the 1990s. The transformation of Japan from a traditional into a modern, industrial society with its costs, disruptions, and benefits will be emphasized. The emergence of Japan as a major power in East Asia, its expansion into Korea and Manchuria, and the growing conflict with the West, leading to the Pacific War, will also be covered as will Japanese postwar political, social, and economic change. All students will write a ten-page term paper on a subject related to modern Japanese history. Classes will be in lecture format with questions and discussions encouraged.

JPN 219A TOURIST JAPAN
Japan's image as a foreign destination, focusing on 1900-1970: Japan defining itself and being defined by others through visual and material culture; the value of material culture in historical practice and theory.

JPN 219W TOURIST JAPAN
Japan's image as a foreign destination, focusing on 1900-1970: Japan defining itself and being defined by others through visual and material culture; the value of material culture in historical practice and theory.

JPN 227 Body Politics: Negotiating Public and Private Discourses of the Body in Japanese Culture
This reading intensive course is centered on public and private discourses of the body in contemporary Japan. Topics will include, but are not limited to: gender and sexuality, reproductive rights and motherhood, body image and beauty standards, youth and old age, masculinity and femininity, and health and disease. Through the conduit of journal articles, films, autobiographical essays, fiction, manga, and scholarly critiques, this course will expose students to a variety of rhetorical strategies and popular mediums concerning the body in Japan. In addition, this course will enrich students’ understanding of issues facing contemporary Japan and the ways in which we read and write about the body.

JPN 227W BODY POLITICS IN JPN CULTURE

JPN 231 ASIAN CALLIGRAPHY: HISTORY & PRACTICE I
An introduction to the Chinese and Japanese writing systems, including their historical development, artistic practices and practical applications. This entails the study of Kaisho (print script) of Kanji (Chinese characters) and the learning of the meanings of the Kanji. One class meeting per week will be devoted to the study of Calligraphy. Ideal for those studying Chinese or Japanese, but experience in the languages, while helpful, is not required. Please note that students must provide their own Asian Calligraphy equipment for practicing Kanji and complete weekly assignments.

JPN 232 ASIAN CALLIGRAPHY: HISTORY & PRACTICE II
An elemental study of the Chinese and Japanese writing systems, including their historical development, artistic practices and practical applications. This entails the study of Kaisho (print script), the Gyosho (cursive style) and Sosho (simplified cursive style) of Kanji (Chinese characters), as well as learning the meanings of the Kanji. One class meeting per week will be devoted to the study of calligraphy. Ideal for those who have studied some calligraphy previously, but this is not required. Likewise, previous study of Chinese or Japanese, while helpful, is not required. Please note that students must provide their own Asian calligraphy equipment for practicing Kanji and complete weekly assignments.

JPN 233 THE CULTURE OF ZEN
Zen Buddhism was the core around which many of Japan’s greatest cultural achievements evolved. From the medieval period on, with its importation from China, the culture of Zen served as the primary context for much of Japanese metaphysics, architecture, landscape and interior design, medicine, ink painting, noh drama, haiku poetry, as well as the entire cultural complex known as the tea ceremony. Along with the Zen doctrinal and textual roots of these remarkable achievements, this course will examine the vibrant culture fostered in the medieval Zen monastic temple institution known as the Gozan and its dispersal into the culture at large.

**JPN 233W THE CULTURE OF ZEN**

**JPN 246 ISSUES IN CONTEMPORARY CULTURE**

This seminar course is based on research on and discussion of a variety of issues of contemporary concern in Japan, including national, ethnic and racial identity; changing gender and sex roles; the family and generational conflict; immigration and work; the emperor system, war, and memory; cultural authenticity; and Japan's changing roles in Asia and in the world. Readings on issues begin with articles in the online English-language editions of Japan's main news media, extend outward to reports in the US news media, and eventually to popular and scholarly English-language studies of the issues involved. Grading is based on participation in informed discussion of issues raised in class (20%), and on four papers on issues to be chosen by each student with the instructors permission (20% each).

**JPN 246W CONTEMPORARY JPN CULTURE**

**JPN 269 "The Floating World of Japanese Art, 1570-1870"**

This course explores the “floating world” of consumer desires and pleasures in Japan’s urban centers during the 17th - 19th centuries. Subjects include entertainment and advertising, theater and eroticism, body and gender, landscape and nature, poetry and culture, satire and allegory, and alien peoples and ideas. Special attention is given to the social contexts in which the visual products of this culture were created and consumed.

**JPN 270 RELIGION & JAPANESE CULTR**

**JPN 274 Modern Japanese Women Writers**

This course traces the history of modern Japanese women’s writing, beginning with the early twentieth-century and continuing to present day. In doing so, this course addresses the historical background and contribution of women writers to the development and progression of modern Japanese literature. Throughout the course, we will pay close attention to the ways in which Japanese women writers have used fiction to challenged convention and expectation. Key issues include sex and sexuality, the nature and rhetoric of desire, and the politics of the female body. Writers to be considered are Higuchi Ichiyō, Hirabayashi Taeko, Yamada Eimi, Miyabe Miyuki, Kanehara Hitomi, and many others. In addition, the course also asks students to engage with critical scholarship in English that offers new ways of thinking and talking about Japanese women’s writing. No previous knowledge of Japan or Japanese is required.

**JPN 274W MODERN JPN WOMEN WRITERS**

**JPN 285 DIRECTOR STUDIES: AKIRA KUROSAWA**

The films of Akira Kurosawa, his co-workers, and the contemporary issues and aesthetic influences important to his career.

**JPN 390 SUPERVISED TEACHING**

**JPN 391 INDEPENDENT STUDY**

**JPN 391W INDEPENDENT STUDY**

**JPN 392 PRACTICUM IN JAPANESE**

**JPN 393 SENIOR ESSAY**

A paper based upon independent study; required of concentrators.
**JPN 407 FILM AS OBJECT**
The tangible object at the origin of the onscreen image: the social, cultural and historical value of motion pictures and national film cinemas through an understanding of “Film” as an organic object.

**JPN 411 MODERN JPN LIT IN TRANS**

**JPN 412 JAPANESE POPULAR CULTURE**

**JPN 414 ATOMIC CREATURES: GODZILLA**
Origins and development of the Japanese kaiju eiga (monster film): nuclear imagery and the science fiction/horror/creature film genre.

**JPN 419A TOURIST JAPAN**
Japan's image as a foreign destination, focusing on 1900-1970: Japan defining itself and being defined by others through visual and material culture; the value of material culture in historical practice and theory.

**JPN 427 BODY POLITICS IN JPN CULTURE**

**JPN 433 THE CULTURE OF ZEN**

**JPN 446 CONTEMPORARY JPN CULTURE**

**JPN 474 MODERN JPN WOMEN WRITERS**

**JPN 485 DIRECTOR STUDIES: AKIRA KUROSAWA**
The films of Akira Kurosawa, his co-workers, and the contemporary issues and aesthetic influences important to his career.

**JST 101 ELEMENTARY HEBREW I**
Introduction to the structure of Modern Hebrew. Practice in vocabulary, use, grammar, reading, and writing.

**JST 102 ELEMENTARY MODERN HEBREW II**
Direct continuation of Hebrew 101 with emphasis on enhancing reading, writing, and speaking skills.

**JST 103 INTERMEDIATE HEBREW**
Continuation of HEB 102 with emphasis on enhancing reading comprehension and writing and speaking skills. Students are expected to have good understanding of the structure of Hebrew including familiarity with verb forms.

**JST 104 INTERMEDIATE MODRN HEBREW II**

**JST 106 INTRODUCTION TO THE OLD TESTAMENT**
Examination of the Old Testament/Hebrew Bible in Ancient Israel in its religious, historical, and literary contexts.

**JST 110 INTRO TO BIBLICAL HEBREW**

**JST 113 HISTORY OF JUDAISM**
An introduction to the religious and cultural development of Judaism. Will emphasize Judaism as a living tradition, one which has been subject to both continuity and change among its practitioners throughout its history.

**JST 125 REL,RACE,ETHNICITY IN AMERICA**

**JST 145 JUDAISM IN AMERICA**
JST 178 RELIGION, FOOD & EATING IN AMER

JST 179 JEWS AND POPULAR CULTURE
Full title, “Entertaining America: Jews & Popular Culture”, is a thematic introduction to the relationship between Jews and American entertainment media from the turn of the 20th century to today. Will address Jewish experience in radio, Hollywood, theatre, and television, as well as popular print culture such as comic books.

JST 181 “OTHER” IN MODERN HEBREW LIT

JST 188 ISS CONTEMP JEWISH THOUGHT

JST 204 HEBREW THROUGH MEDIA AND LIT
This is a fourth semester course in the Hebrew language series designed to enhance and advance conversational skills using various sources including Israeli newspapers, Hebrew stories, and topical discussions based on students' interests and Israeli life.

JST 209 JUDAISM IN THE ANCIENT WORLD

JST 210 JEWISH CIVILIZATION-POLAND
Presents a survey of Jewish history in Poland from the beginning of Jewish settlement on Polish lands through the present. Special attention is paid to key events important for Jewish history and Polish-Jewish relations.

JST 210A THE JEWS IN POLAND
A survey of history of Jewish communities in Poland and the Holocaust. Post-Holocaust history of the Jews and Jewish culture in Poland will also be covered with the emphasis on Jewish-non-Jewish relations and anti-Semitism, as well as recent revival of the Jewish life in Poland.
Offered: Summer

JST 211 JEWS, PAGANS AND CHRISTIANS
Historical and recent readings are used to analyze issues such as: existence of God, divine attributes, the relation of God to the world, and faith and reason.

JST 212 JEWISH PHILOSOPHY

JST 213 JEWISH MYSTICISM

JST 214 IMAGINING THE JEW
Popular representations of Jews and their influence on Jewish acculturation, Americanization, and continuity.

JST 216 JEWS AND MULTICULTURALISM

JST 217 MODERN JEWISH PHILOSOPHY
The music of Judaism and the Jewish people from the earliest times until the present and the role of music in shaping the character of Jewish historical, religious, and cultural experience.

JST 219 HOLOCAUST IN FILM & LIT
How does one represent the unrepresentable? This is the key question we will explore as we look at films and literature about the Holocaust. As we look at fictional films, novels, documentaries and memoirs, we will discuss topics including memory, trauma, truth and representation. This course offers a look at the ways in which artists and their audiences negotiate the themes of loss, horror and redemption within the context of the Holocaust and its aftermath.

JST 220 JEWS & MULTICULTURALISM IN AMERICA
Jewish immigration in the U.S. and the ways in which these immigrants chose to acculturate (or not).
JST 222 VENICE AND THE JEWS

JST 229 KAFKA & HIS WORLD

JST 232 GERMAN THINKERS

JST 234 STRANGERS IN A STRANGE LAND

JST 242 JEWISH WRITERS AND REBELS

JST 248 RUSSIAN IDENTITY
This course examines how culture, ethnicity, and politics intersect in 20th-century Russian literature. We begin with excerpts from Dostoevsky's "Diary of a Writer," sacralizing Russianness and demonizing Jews. Political and artistic avant-gardes 1900-1930 are analyzed for their attempts to overcome traditional ethnic divisions. In Stalin's Russia an international Soviet identity was replaced by a Russian state culture, which put "cosmopolitanism" on trial after World War II. A secular Russian cultural identity was the norm until the state withdrew from the cultural sphere in the late 1980s, but Russian Jewish emigre literature was available to many readers through unofficial channels. We end with the battle of competing identities in post-1985 Russia. Readings include: Dostoevsky, Babel, Grossman, Mandelstam, Pasternak, Roziner, Tertz, Markish, Rasputin, and Brodsky. In English.

JST 248W RUSSIAN IDENTITY
This course examines how culture, ethnicity, and politics intersect in 20th-century Russian literature. We begin with excerpts from Dostoevsky's "Diary of a Writer," sacralizing Russianness and demonizing Jews. Political and artistic avant-gardes 1900-1930 are analyzed for their attempts to overcome traditional ethnic divisions. In Stalin's Russia an international Soviet identity was replaced by a Russian state culture, which put "cosmopolitanism" on trial after World War II. A secular Russian cultural identity was the norm until the state withdrew from the cultural sphere in the late 1980s, but Russian Jewish emigre literature was available to many readers through unofficial channels. We end with the battle of competing identities in post-1985 Russia. Readings include: Dostoevsky, Babel, Grossman, Mandelstam, Pasternak, Roziner, Tertz, Markish, Rasputin, and Brodsky. In English.

JST 249 SECRET NATION
The cult and culture of secrecy in Russia from Ivan the Terrible to the present. Russia was always an enigma, as tsarist and Soviet governments gathered and controlled information. The Russian people kept information from the government, and foreign states sent out disinformation of their own about Russia. There was an active underground in religion, literature, politics, the economy, and other areas. With glasnost, Gorbachev began the process of uncovering secrets from above, and a freer press began to do the same from below. We use materials from history, religion, literature, film, political science, and economics, to get a richly detailed picture of the information that was hidden, and the means by which this was accomplished. Official secrecy that was originally a defensive move came to undermine the state it sought to protect. At the end of the semester we see to what extent old habits of secrecy persists in Russia today. The course is taught in English.

JST 265 ISRAEL/PALESTINE

JST 390 SUPERVISED TEACHING

JST 391 INDEPENDENT STUDY

JST 391W INDEPENDENT STUDY

JST 394 INTERNSHIP

KOR 101 ELEMENTARY KOREAN I
Korean is the official language of South Korea and North Korea. It is spoken by about 80 million people worldwide. This course is designed for beginners. It introduces students to the sounds, basic sentence structures, and the writing system of Korean. Emphasis will be on developing listening and speaking skills as well as building a vocabulary. Cultural aspects of the language will also be focused to enhance student's understanding of the language.
LAT 101 ELEMENTARY LATIN I
Come learn the language of Vergil, Cicero, and St. Augustine. Latin has been the western world’s learned language for 2000 years and is the source for most of the scholarly and technical vocabulary of English. The elementary Latin sequence (LAT 101, LAT 102, LAT 103) is designed to get you reading authentic materials quickly. For LAT 101, no Latin background is required or assumed.
Offered: Spring

LAT 102 ELEMENTARY LATIN II
This course completes Latin 101’s introduction to Latin grammar and introduces the reading of continuous Latin prose.
Offered: Fall

LAT 103 INTERMEDIATE LATIN
This course will transition students from the study of grammar to reading lengthy prose passages in classical Latin. It will focus on authors from the end of the Roman Republic and will include grammar review and the historical context in which the texts were composed.
Offered: Spring

LAT 105 INTNSV INTRO CLSCL&MED LATIN

LAT 203 OVID
Translation and discussion of selections from Ovid's "Metamorphoses".

LAT 204 CATULLUS
A close study of the poems of Catullus.
Offered: Fall

LAT 204W CATULLUS

LAT 206 VIRGIL'S AENEID
A study of Virgil's Aeneid. Concentration on translation and interpretation of the work and improving linguistic and critical skills in the student.

LAT 210 CICERO
This course examines representative works of the Roman orator, philosopher, and statesman Cicero, whose writings greatly influenced the development of Latin prose.
Offered: Spring

LAT 217 LIVY AND TACITUS
In this course, we will read selections of the writings of the Roman historians Livy and Tacitus. Much of the class time will be devoted to translation and to understanding the use of language and syntax by the two authors. We will also examine critically the historical content of the texts we are reading, and we will learn about the social and historical setting in which the authors themselves lived and wrote. In this context, we will read some modern scholarship on Livy and Tacitus and also writings (in translation) of other ancient authors.

LAT 220 PLAUTUS & ROMAN COMEDY
A study and translation of one whole play of Plautus and passages from several others.
Offered: Fall

LAT 221 MEDIEVAL LATIN PROSE
Introduction to a variety of Medieval Latin texts. Students complete independent studies of an author or topic of their choice.
LAT 223 LATIN EPIGRAPHY IN ROME

LAT 390 SUPERVISED TEACHING

LAT 391 INDEPENDENT STUDY
Advanced readings in unadapted Latin texts, by arrangement with the instructor.

LAT 391W INDEPENDENT STUDY

LAT 393 SENIOR PROJECT

LAT 421 MEDIEVAL LATIN PROSE
Introduction to a variety of Medieval Latin texts. Students complete independent studies of an author or topic of their choice.

LAT 491 MASTER'S READING COURSE

LAT 495 MASTER'S RESEARCH LATIN

LAT 591 PHD READINGS

LAT 895 CONT OF MASTER'S ENROLLMENT

LIN 101 PEOPLE & THEIR LANGUAGE
This introductory level course is designed for students who have no background in linguistics, with some new topics for students who do. The course addresses the basic question "What is Language?" from a broad variety of perspectives including linguistics, sociolinguistics, historical linguistics, sign language linguistics and gesture study. We will consider questions such as: What elements are found in all human languages? Are they systematically organized or random? Are some languages/dialects better than others? What is the relationship between written and spoken language? How does manual gesture relate to spoken language, and to sign language? How do languages develop? Die? How are they related? In exploring these questions we will confront a variety of common misperceptions about language. Each lecture has reading assignments drawn from the textbook and published articles. Class discussion will be encouraged as much as possible.

Offered: Fall

LIN 102 LANGUAGE & SOCIAL IDENTITY
This course introduces how language is used and perceived to mark social and cultural characteristics of an individual or group of individuals. We will examine how one’s social identity is constructed, which linguistic cues are used consciously to denote different social identities, and how most linguistic cues delineating social groupings are below conscious awareness. This course will discuss topics on prescriptive and descriptive perspectives of language, standardization, dialects, accents, pidgins and creoles, social stratification, and social, racial and linguistic profiling.

Offered: Spring

LIN 103 LANGUAGE & SEXUALITY
This course will investigate various aspects of language as used by members of sexual minority groups, focusing on language of and about gay men, lesbians, bisexuals and transgender people, including "reclaimed epithets" (e.g., 'dyke' and 'queer'), gender vs. sexuality vs. sex, and the role of language in creating/maintaining sexual categories and identities.

LIN 104 LANGUAGE & CULTURE
This course investigates the relationship between language and culture at the interface of linguistics and anthropology. It examines the ways in which language • reflects the perception of the world, ways of life and beliefs of its speakers • creates rituals and maintains social ties • is used by people of different ages, genders, social classes, and ethnicities We will discuss hypotheses that try to explain the nature of relationship between language and culture and then turn to a wide variety of topics which are relevant for both linguists and anthropologists. These include, for instance, kinship systems and language, language
of perception (e.g. colors, spatial relations), culture and language change/language variation, writing systems, and intercultural communication.

**LIN 105 LANGUAGE & ADVERTISING**
The course examines the use advertisers make of language in selling their products and how it affects our perceptions of the product and ourselves. The emphasis in the course is on learning about the structure of language and how we can use it as a guide to observing and understanding the effectiveness of commercial messages.
Offered: Spring

**LIN 110 INTRODUCTION TO LINGUISTIC ANALYSIS**
This course introduces students to the study of the structure of human language. We will cover the six core areas of linguistic investigation: Phonetics (articulation, acoustics, and perception of speech sounds), Phonology (sound patterns), Morphology (internal structure of words and their organization in the mental lexicon), Syntax (internal structure of phrases and sentences), Semantics (word and sentence meaning), and Pragmatics (language use in context). The course focuses on developing skills in the areas of linguistic data analysis and interpretation of linguistic data in ways that aim to address theoretical and empirical issues in the study of language.
Offered: Fall Spring

**LIN 161 MODERN ENGLISH GRAMMAR**
This course is a comprehensive review of the grammar of Modern Standard English. The course will be of interest to those who wish to sharpen their language skills, or to know more about the workings of the English language whether for practical, cognitive or creative ends. Drawing on work in mostly pre-theoretical, descriptive linguistics this course reveals the mechanics of Standard English structure, with occasional detours into the finesse of usage across registers (dialect to slang). Students will learn to develop the ability to see patterns in grammar, as well as its structural possibilities and limits. Assignments will regularly involve reflection on form, usage and speaker judgments. Through a final project, students will investigate some aspect of an English variety available to them. Throughout, students will be working with their data samples of English to explore how speaker choices lead to particular grammatical structures or yield ungrammaticality. Background in linguistics or grammar not needed.

**LIN 162 MODERN AFRICAN-AMERICAN ENGLISH**
This course looks at the varieties of English used primarily by and among African Americans. We will first explore and discuss the linguistic features (lexicon and grammar) of African American English (AAE). We will also investigate the ways in which AAE is being utilized in popular culture. Additionally, we will look at AAVE’s connection to African languages and creoles. Finally, this course will look at the issues connected to AAVE and attitudes towards this variety and its effects on teachers’ expectations and students’ progress; linguistic profiling and discrimination in employment and housing.
Offered: Spring

**LIN 205 HISTORICAL LINGUISTICS**
This course is designed to give an introduction to the principles of linguistic variation and change, and to examine their practical application in the interdisciplinary subfields of historical linguistics and historical sociolinguistics. Topics covered include diachrony and synchrony, genetic relations, the comparative method and language classification, sound change, morphological, syntactic and semantic change, borrowing, types of language contact, areal linguistics, and linguistic variation and social stratification.
Offered: Spring

**LIN 206 HISTORY OF ENGLISH LANGUAGE**
The development of the English language from the Anglo Saxon period on up, focusing on texts from representative periods.

**LIN 207 OLD ENGLISH LITERATURE&LANG**

**LIN 208 LANGUAGE DEVELOPMENT**
Introduces children's language development, including the acquisition of phonology, syntax, and semantics. Focuses on the acquisition of a first language by young children, comparing the acquisition of a variety of spoken and signed languages to find possible universal principles of language learning.

**LIN 210 INTRODUCTION TO LANGUAGE SOUND SYSTEMS**
This course introduces students to the principles underlying sound systems in human language. Attention will be given to articulatory phonetics, with some discussion of acoustic phonetics; practice in the production, recognition, and transcription of sounds in various languages of the world, and to the fundamentals of phonological analysis and argumentation through hands-on investigation of language sound systems.
Offered: Fall

**LIN 210W INTRODUCTION TO LANGUAGE SOUND SYSTEMS**
This course introduces students to the principles underlying sound systems in human language. Attention will be given to articulatory phonetics, with some discussion of acoustic phonetics; practice in the production, recognition, and transcription of sounds in various languages of the world, and to the fundamentals of phonological analysis and argumentation through hands-on investigation of language sound systems.

**LIN 217 LANGUAGE & PSYCHOLINGUISTICS**
Overviews the nature and processing of human languages, including comparisons between language and animal communication systems, the biological bases of human language, and the cognitive mechanisms used in producing, understanding, and learning language.

**LIN 218 LANGUAGE & THE BRAIN**
Examines how the comprehension and production of language is implemented in the human brain. Uses evidence from neuropsychological and brain imaging studies to consider the following questions: What is the network of brain areas that subserves language processing? What are the specific functions of these areas? What happens when these brain areas are damaged? What is the timing of brain activity in these areas during language processing? Finally, how do the brain areas involved in language processing overlap with those involved in other complex cognitive processes?

**LIN 219 PHILOSOPHY OF LANGUAGE**

**LIN 220 INTRODUCTION TO GRAMMATICAL SYSTEMS**
This introductory course examines the grammatical structure of sentences from the standpoint of transformational grammar. The course develops the basic techniques of syntactic analysis in order to develop a working grammar of a (fragment of) English. No syntax background is assumed. This course is intended for majors and non-majors alike.
Offered: Spring

**LIN 225 INTRODUCTION TO SEMANTIC ANALYSIS**
This course introduces students to the basics of the analysis of meaning in natural language. The first section focuses on devices that motivate certain forms to take on the meanings they have. The second section of the course moves on to discuss how meanings combine to form meanings for larger units—how words and phrases combine to form sentence meanings. Using logical notation we illustrate the formal analysis of natural language meaning in terms of truth-conditions. We will discuss the basics of set theory, and investigate how meanings represented in these terms correlate with the syntactic and lexical structures of sentences of natural language. Students of graduate standing or those with strong formal backgrounds may consider starting with LIN 265/465 instead, for which this course is ordinarily a prerequisite. This course counts towards satisfying the core course requirement for majors.
Offered: Fall

**LIN 226 MORPHOLOGY**
The course examines the structure and definition of the linguistic unit "word", its typology, and the relationship of the morphological component to other levels in the grammar. The course includes an introduction to analytical techniques with emphasis placed on an examination of data from a range of languages. The building blocks of words will be analyzed and topics such as affixation, reduplication and inflectional and derivational morphology will be covered. We will examine the properties of words and how they fit into the larger structure of linguistic knowledge, including the relationship between words and syntactic
structure (ex., phrases and sentences) and the relationship between words and phonological structure (ex., phonological rules and prosodic structure).
Offered: Fall

**LIN 227 TOPICS IN PHONETICS & PHONOLOGY**
This is a laboratory course intended to provide participants with an overview of research in laboratory phonology. Issues vary from term to term but cover areas in segmental, metrical and intonational phonology and the phonology/phonetics interface.
Offered: Spring

**LIN 228 LEXICAL SEMANTICS**
This course investigates the study of word-meaning in current linguistics and cognitive science. We do not only investigate the meanings of lexical items such as verbs, nouns, adjectives, and prepositions, but also other categories of words, including: function words, discourse particles, and expressives (such as, “Ouch!”). We examine theories of word-meaning, and examine how word and vocabulary may vary between languages.

**LIN 230 SIGNED LANGUAGE STRUCTURE**
Examines signed languages and the cognitive constraints that shape them, through a detailed consideration of the structure of American Sign Language and other natural signed languages of the world. Includes training in sign language notation and analysis. Knowledge of sign language is required.

**LIN 241 LANGUAGE USE & UNDERSTANDING**
Explores the cognitive mechanisms used to speak and understand language, with a special focus on contextually situated language use. Studies the moment-by-moment processes underlying language production and comprehension, including how speakers choose words and phrases and how listeners understand them.

**LIN 247 NATURAL LANGUAGE PROCESSING**
An introduction to natural language processing: constructing computer programs that understand natural language. Topics include parsing, semantic analysis, and knowledge representation. CSC 447, a graduate-level course, requires additional readings and assignments. Prereqs: CSC 172 & CSC 242

**LIN 248 STATISTICAL SPEECH & LANGUAGE PROCESSING**
An introduction to statistical natural language processing and automatic speech recognition techniques. This course presents the theory and practice behind the recently developed language processing technologies that enable applications such as speech-driven dictation systems, document search engines (e.g., finding web pages) and automatic machine translation. Students taking this course at the 400 level will be required to complete additional readings and/or assignments. Pre-reqs: CSC 172 and CSC 242

**LIN 250 DATA SCIENCE FOR LINGUISTICS**
This course addresses linguistic research questions through data science techniques. The course will focus on developing skills to (i) acquire and process a variety of language data, from using established corpora to capturing Twitter feeds, and (ii) to investigate language use, particularly syntactic and semantic phenomena, through descriptive and inferential statistical techniques. A significant part of the course will be devoted to hands-on projects and will include developing familiarity with using the programming languages Python and R to acquire and explore linguistic data. Familiarity with statistics and/or computational linguistics is advantageous, but not necessary.
Offered: Spring

**LIN 260 SYNTACTIC THEORY**
This course picks up where LIN 220 leaves off, exploring topics in natural language syntax from a cross-linguistic perspective. The goal of the course is an approach to syntax that accounts for both language-particular as well as universal constraints on language. Among the topics studied are head and phrase movement, constraints on co-reference (anaphora), ellipsis, and agreement (phi features).
Offered: Spring

**LIN 261 PHRASE STRUCTURE GRAMMARS**
This syntactic theory course examines syntactic phenomena from the perspective of phrase structure and lexicalist grammar as opposed to transformational grammar. The course will examine and develop phrase structure grammar (specifically Head-driven Phrase Structure Grammar) approaches to standard syntactic problems, contrasting them where appropriate with transformational approaches. No background in non-transformational approaches will be assumed. This course can be taken as LIN 261 or as LIN 461 and is meant for linguistics majors and non-majors alike.

Offered: Fall

**LIN 262** TOPICS IN EXPERIMENTAL SYNTAX

This course provides an introduction to experimental methods that can be used to investigate questions that are relevant for syntactic theory. We will discuss a range of methodologies, including self-paced reading, visual world eye-tracking, magnitude estimation and questionnaires. The course will be organized around several topics that have been central to syntactic research, such as anaphor resolution, ellipsis and quantifier scope in order to examine how experimental methods can complement existing work; for example, by shedding light on areas where stable judgments have traditionally been difficult to obtain, and by allowing us to investigate the time course of real-time language processing. By the end of this course students will be able to understand and critically evaluate research that uses various experimental methods, and be able to design and run their own experiments.

**LIN 265** FORMAL SEMANTICS

This course is an in-depth introduction to the formal analysis of natural language meaning, employing techniques that have been developed in language and formal philosophy over the last century. Issues include intensionality, quantification, tense, presupposition, plurality, the analysis of discourse, and other current issues. Familiarity with syntax, logic, and/or computation are helpful but not necessary.

Offered: Spring

**LIN 266** INTRODUCTION TO PRAGMATICS

Within theoretical linguistics, pragmatics is (broadly speaking) the study of how language users convey meaning. This course covers three general areas: (1) How meaning carried by linguistic elements (such as sentences) interacts with meaning that arises from inferences about speakers’ intentions; (2) Ways of characterizing meaning, especially with respect to linguistic elements not easily handled in traditional semantic (i.e., truth-conditional) terms; (3) The role of context in determining meaning. Topics to be discussed include the relation between semantics and pragmatics, representations of context, truth-conditional and other types of meaning, presupposition; implicature and Grice’s Cooperative Principle

Offered: Spring

**LIN 268** COMPUTATIONAL SEMANTICS

This course is a hands-on exploration of recent advances in computational models of meaning. Topics include implementing traditional rule-based compositional semantics, estimating meaning from large-scale corpus resources, and extracting meaning patterns through data science techniques.

**LIN 270** TOOLS FOR LANGUAGE DOCUMENTATION

This is a hands-on class that introduces you to major techniques and tools in language documentation and description. You will learn how to collect and record a variety of language data through elicitation and text collection. The emphasis is then on organizing, managing, and processing these data sets for various purposes, such as building up a dictionary, annotating natural speech, and time-aligning media of different formats with computational tools such as Praat, Toolbox, and ELAN. Further, we will discuss crucial topics in language documentation such as fieldwork, ethics, and language revitalization.

**LIN 387** LINGUISTICS RESEARCH TOPICS

This course explores issues related to Language Documentation which has flourished over the past decades, in part due to increasing interest in endangered languages. In contrast to traditional language description, which typically results in grammars and dictionaries, language documentation seeks to capture how language is used in its natural environment, resulting in information that is usually not found in grammars, for instance how jokes are told, how parents talk with their children, or how hunters communicate in a tropical rain forest. The course covers the major aspects of language documentation including fieldwork, language description, lexicography, text collection and processing, and computational tools for language documentation (e.g. ELAN).

Offered: Spring
LIN 388 TOPICS IN LANGUAGE CONTACT
Typology (Phonetic/Phonological, Morphosyntactic, Semantic, Discourse). Languages of the World: looking at the range of languages, language families and isolates across the world from a typological perspective, including typological variation within and among language families and areal features. Language in flux will also be addressed, e.g., historical changes, developmental acquisition data, competence vs. performance distinction. Language vitality topics will be covered, such as language death and language description, documentation, preservation and revitalization. The class will combine lectures led by the instructor and seminar sessions led by students.
Offered: Spring

LIN 389 SENIOR SEMINAR
A seminar course for senior Linguistic majors in their last semester of coursework. This seminar is a linguistics field methods course. We will work with a native speaker to elicit data and provide a description of the grammar of that speaker's language based on our data. This course is designed for senior Linguistics majors; for interested non-Linguistics majors or those who are not in their last semester of Linguistics coursework, please contact the instructor.
Offered: Spring

LIN 390 SUPERVISED TEACHING

LIN 391 INDEPENDENT STUDY

LIN 391W INDEPENDENT STUDY

LIN 393 SENIOR PROJECT

LIN 394 INTERNSHIP

LIN 395 RESEARCH IN LIN

LIN 405 HISTORICAL LINGUISTICS
This course is designed to give an introduction to the principles of linguistic variation and change, and to examine their practical application in the interdisciplinary subfields of historical linguistics and historical sociolinguistics. Topics covered include diachrony and synchrony, genetic relations, the comparative method and language classification, sound change, morphological, syntactic and semantic change, borrowing, types of language contact, areal linguistics, and linguistic variation and social stratification.
Offered: Spring

LIN 410 INTRODUCTION TO LANGUAGE SOUND SYSTEMS
Introduces students to the principles underlying sound systems in human language. Attention will be given to articulatory phonetics, with some discussion of acoustic phonetics; practice in the production, recognition, and transcription of sounds in various languages of the world, and to the fundamentals of phonological analysis and argumentation through hands-on investigation of language sound systems.
Offered: Fall

LIN 420 INTRO TO GRAMMATICAL SYSTEMS
This introductory course examines the grammatical structure of words and sentences from the standpoint of modern linguistic theory. The course develops the basic techniques and concepts of morphological and syntactic analysis placing particular emphasis on the ways in which semantic, morphological and lexical information interacts with the syntax. No syntax background is assumed. This course is intended for majors and non-majors alike.
Offered: Spring

LIN 425 INTRODUCTION TO SEMANTIC ANALYSIS
This course introduces students to the basics of the analysis of meaning in natural language. The first section focuses on devices that motivate certain forms to take on the meanings they have. The second section of the course moves on to discuss how
meanings combine to form meanings for larger units—how words and phrases combine to form sentence meanings. Using logical notation we illustrate the formal analysis of natural language meaning in terms of truth-conditions. We will discuss the basics of set theory, and investigate how meanings represented in these terms correlate with the syntactic and lexical structures of sentences of natural language. Students of graduate standing or those with strong formal backgrounds may consider starting with LIN 265/465 instead, for which this course is ordinarily a prerequisite. This course counts towards satisfying the core course requirement for majors.

**LIN 426 MORPHOLOGY**

The course examines the structure and definition of the linguistic unit "word"—its typology and the relationship of the morphological component to other levels in the grammar. The course includes an introduction to analytical techniques with emphasis placed on an examination of data from a range of languages. The building blocks of words will be analyzed and topics such as affixation, reduplication and inflectional and derivational morphology will be covered. We will examine the properties of words and how they fit into the larger structure of linguistic knowledge, including the relationship between words and syntactic structure (ex., phrases and sentences) and the relationship between words and phonological structure (ex., phonological rules and prosodic structure).

Offered: Fall

**LIN 427 TOPICS PHONETICS & PHONOLOGY**

This is a laboratory course intended to provide participants with an overview of research in laboratory phonology. Issues vary from term to term but cover areas in segmental, metrical and intonational phonology and the phonology/phonetics interface.

Offered: Spring

**LIN 428 LEXICAL SEMANTICS**

**LIN 430 SIGNED LANGUAGE STRUCTURE**

**LIN 447 NATURAL LANGUAGE PROCESSING**

**LIN 448 STAT SPEECH & LANG PROCESSING**

**LIN 450 DATA SCIENCE FOR LINGUISTICS**

This course addresses linguistic research questions through data science techniques. The course will focus on developing skills to (i) acquire and process a variety of language data, from using established corpora to capturing Twitter feeds, and (ii) to investigate language use, particularly syntactic and semantic phenomena, through descriptive and inferential statistical techniques. A significant part of the course will be devoted to hands-on projects and will include developing familiarity with the programming languages Python and R to acquire and explore linguistic data. Familiarity with statistics and/or computational linguistics is advantageous, but not necessary.

Offered: Spring

**LIN 460 SYNTACTIC THEORY**

This course picks up where LIN 220 leaves off, exploring topics in natural language syntax from a cross-linguistic perspective. The goal of the course is an approach to syntax that accounts for both language-particular as well as universal constraints on language. Among the topics studied are head and phrase movement, constraints on co-reference (anaphora), elipsis, and agreement (phi features).

Offered: Spring

**LIN 461 PHRASE STRUCTURE GRAMMARS**

This syntactic theory course examines syntactic phenomena from the perspective of phrase structure and lexicalist grammar as opposed to transformational grammar. The course will examine and develop phrase structure grammar (specifically Head-driven Phrase Structure Grammar) approaches to standard syntactic problems, contrasting them where appropriate with transformational approaches. No background in non-transformational approaches will be assumed. This course can be taken as LIN 261 or as LIN 461 and is meant for linguistics majors and non-majors alike.

**LIN 462 TOPICS IN EXPERIMENTAL SYNTAX**
This course provides an introduction to experimental methods that can be used to investigate questions that are relevant for syntactic theory. We will discuss a range of methodologies, including self-paced reading, visual world eye-tracking, magnitude estimation and questionnaires. The course will be organized around several topics that have been central to syntactic research, such as anaphor resolution, ellipsis and quantifier scope in order to examine how experimental methods can complement existing work; for example, by shedding light on areas where stable judgments have traditionally been difficult to obtain, and by allowing us to investigate the time course of real-time language processing. By the end of this course students will be able to understand and critically evaluate research that uses various experimental methods, and be able to design and run their own experiments.

**LIN 465 FORMAL SEMANTICS**
This course is an in-depth introduction to the formal analysis of natural language meaning, employing techniques that have been developed in language and formal philosophy over the last century. Issues include intensionality, quantification, tense, presupposition, plurality, the analysis of discourse, and other current issues. Familiarity with syntax, logic, and/or computation are helpful but not necessary.

**LIN 466 INTRODUCTION TO PRAGMATICS**
Within theoretical linguistics, pragmatics is (broadly speaking) the study of how language users convey meaning. This course covers three general areas: (1) How meaning carried by linguistic elements (such as sentences) interacts with meaning that arises from inferences about speakers’ intentions; (2) Ways of characterizing meaning, especially with respect to linguistic elements not easily handled in traditional semantic (i.e., truth-conditional) terms; (3) The role of context in determining meaning. Topics to be discussed include the relation between semantics and pragmatics, representations of context, truth-conditional and other types of meaning, presupposition; implicature and Grice’s Cooperative Principle
Offered: Spring

**LIN 468 COMPUTATIONAL SEMANTICS**
This course is a hands-on exploration of recent advances in computational models of meaning. Topics include implementing traditional rule-based compositional semantics, estimating meaning from large-scale corpus resources, and extracting meaning patterns through data science techniques.

**LIN 470 TOOLS FOR LANGUAGE DOCUMENTATION**
This is a hands-on class that introduces you to major techniques and tools in language documentation and description. You will learn how to collect and record a variety of language data through elicitation and text collection. The emphasis is then on organizing, managing, and processing these data sets for various purposes, such as building up a dictionary, annotating natural speech, and time-aligning media of different formats with computational tools such as Praat, Toolbox, and ELAN. Further, we will discuss crucial topics in language documentation such as fieldwork, ethics, and language revitalization.

**LIN 491 MASTER’S READING IN LIN**

**LIN 495 MASTER’S RESEARCH IN LING**

**LIN 501 METHODS IN LING RESEARCH**
An introduction to the field of linguistics and natural language emphasizing a theoretical perspective. Topics will cover subfields of linguistics, including phonetics, phonology, morphology, syntax, semantics and pragmatics.

**LIN 520 SYNTAX**
This is a graduate class on syntactic theory, focusing mainly on modern transformational approaches (minimalism) to cross-linguistic language structure phenomena. In addition to reading original research leading up to the current state of the art, the course will focus on several case studies (such as pronoun/reflexive reference resolution and ellipsis phenomena) comparing transformational and non-transformational approaches.

**LIN 535 FORMAL PRAGMATICS**
This seminar explores current topics in pragmatics and its interfaces with other areas including prosody, syntax, semantics. Topics may include implicature, presupposition, at-issueness, speech act theory, information structure, the dynamics of discourse, and the structure of discourse contexts. In addition to discussing recent and classical theoretical works, the seminar
aims to incorporate data and theoretical insights from various perspectives including fieldwork on non-English languages, psycholinguistics, and corpus methodologies.

**LIN 590** SUPERVISED TEACHING

**LIN 591** PHD READING COURSE IN LING

**LIN 595** PHD RESEARCH IN LING

**LIN 595A** PHD RESEARCH IN ABSENTIA

**LIN 895** CONT OF MASTER'S ENROLLMENT

**LIN 897** MASTER'S DISSERTATION

**LIN 899** MASTER'S DISSERTATION

**LIN 985** LEAVE OF ABSENCE

**LIN 986V** FULL TIME VISITING STUDENT

**LIN 995** CONT OF DOCTORAL ENROLLMENT

**LIN 997** WRITING DISSERTATION

**LIN 997A** DOCT DISSERTATN IN ABSENTIA

**LIN 999** DOCTORAL DISSERTATION

**LIN 999A** DOCT DISSERTATN IN ABSENTIA

**LTS 200** STUDIES IN TRANSLATION

This course will introduce students to the theoretical backgrounds, practical challenges, and creative activity of literary translation. We will survey appropriate theories of language and communication including semiotics, post-structuralism, pragmatics, discourse analysis, and cognitive linguistics. We will consider varied and conflicting descriptions by translators of what it is they believe they are doing and what they hope to accomplish by doing it; and we will study specific translations into English from a variety of sources in order to investigate the strategies and choices translators make and the implication of those choices for our developing sense of what kinds of texts translations actually are. Finally, students will, in consultation with the instructor or with another qualified faculty member, undertake exercises in translation of their own. By the end of this class each student should have a working knowledge of both the critical backgrounds and the artistic potentials of translation.

**LTS 201** POLISH AND AMERICAN POETRY

**LTS 201A** CONTEMPORARY POETRY

**LTS 201B** NOBEL PRIZE LITERATURE

**LTS 206** TRANSLATION&WORLD LITERATURE

The focus of World Literature in Translation is to examine what makes a translation "successful" as a translation. By reading a series of recently translated works (some contemporary, some retranslations of modern classics), and by talking with translators, we will have the opportunity to discuss both specific and general issues that come up while translating a given text. Young translators will be exposed to a lot of practical advice throughout this class, helping to refine their approach to their own translations, and will expand their understanding of various practices and possibilities for the art and craft of literary translation.
LTS 232 JEWISH WRITERS AND REBELS
In February 2011, the website Jewcy published a list of the 50 most essential works of Jewish fiction of the last 100 years. The featured books come from many different languages, cultures, and time periods and are written in a myriad of literary styles. Although few would argue with the names on the list (Kafka, Bellow, Singer), the diversity of the authors involved raises the question: what makes Jewish literature Jewish? This course will attempt to answer that question by looking at an international group of writers (some of whom identify as Jewish and some of whom do not) who often challenge their (religious and cultural) upbringing as well as the dominant politics of the countries in which they live. The authors we will read include: Franz Kafka, Jakov Lind, Bruno Schulz, Edmund Jabès, Georges Perec and Clarice Lispector.

LTS 236 CONTEMPORARY POETRY

LTS 375 SEMINAR IN FICTION

LTS 391 INDEPENDENT STUDY

LTS 392 PRACTICUM

LTS 394 INTERNSHIP

LTS 395 INDEPENDENT RESEARCH
Capstone project for the program. Under the direction of an advisor, students complete a translation into English of a group of poems, a short story or novella, or an excerpt from a novel or play.

LTS 396 PUBLISHING LITERARY TRANSLATION
This course runs in combination with an internship at Open Letter Books and focuses on explaining the basics of the business of literary publishing: editing, marketing, promoting, fundraising, ebooks, the future of bookselling, etc. Literature in translation is emphasized in this class, and all the topics covered tie in with the various projects interns work on for Open Letter Books.

LTS 397 LIT PUBLISHING: E-BOOK LAB

LTS 400 STUDIES IN TRANSLATION
This course will introduce students to the theoretical backgrounds, practical challenges, and creative activity of literary translation. We will survey appropriate theories of language and communication including semiotics, post-structuralism, pragmatics, discourse analysis, and cognitive linguistics. We will consider varied and conflicting descriptions by translators of what it is they believe they are doing and what they hope to accomplish by doing it; and we will study specific translations into English from a variety of sources in order to investigate the strategies and choices translators make and the implication of those choices for our developing sense of what kinds of texts translations actually are. Finally, students will, in consultation with the instructor or with another qualified faculty member, undertake exercises in translation of their own. By the end of this class each student should have a working knowledge of both the critical backgrounds and the artistic potentials of translation.

LTS 401 TRANSLATION PORTFOLIO

LTS 401A CONTEMPORARY POETRY

LTS 401B NOBEL PRIZE LITERATURE

LTS 402 MIXED GENRE TRANSLATION

LTS 406 TRANSLATION&WORLD LITERATURE
The focus of World Literature in Translation is to examine what makes a translation "successful" as a translation. By reading a series of recently translated works (some contemporary, some retranslations of modern classics), and by talking with translators, we will have the opportunity to discuss both specific and general issues that come up while translating a given text. Young translators will be exposed to a lot of practical advice throughout this class, helping to refine their approach to their own translations, and will expand their understanding of various practices and possibilities for the art and craft of literary translation.
LTS 410 INTRO TO LITERARY PUBLISHING

LTS 411 POLISH AND AMERICAN POETRY

LTS 432 JEWISH WRITERS AND REBELS
In February 2011, the website Jewcy published a list of the 50 most essential works of Jewish fiction of the last 100 years. The featured books come from many different languages, cultures, and time periods and are written in a myriad of literary styles. Although few would argue with the names on the list (Kafka, Bellow, Singer), the diversity of the authors involved raises the question: what makes Jewish literature Jewish? This course will attempt to answer that question by looking at an international group of writers (some of whom identify as Jewish and some of whom do not) who often challenge their (religious and cultural) upbringing as well as the dominant politics of the countries in which they live. The authors we will read include: Franz Kafka, Jakov Lind, Bruno Schulz, Edmund Jabès, Georges Perec and Clarice Lispector.

LTS 462 COLONIAL LATIN AMERICAN LIT

LTS 465 DON QUIXOTE

LTS 474 CARIBBEAN NOVEL & THEORY

LTS 491 MASTER’S READING COURSE

LTS 494 MASTER’S INTERNSHIP

LTS 495 MASTER’S RESEARCH

LTS 895 CONT OF MASTER’S ENROLLMENT

LTS 897 MASTERS DISSERTATION

LTS 899 MASTERS DISSERTATION

LTS 985 LEAVE OF ABSENCE

ME 090 UR SAE BAJA TEAM
UR SAE BAJA TEAM MEMBERS

ME 104 THE ENGINEERING OF BRIDGES
An introduction to the art of bridge building based on the study of the engineering and technological problems involved in the design, construction, and collapse of bridges from antiquity to the present time. The course includes several case studies of major historical bridges selected for their structural significance. Students learn how to calculate the forces acting on structural elements, how these forces depend on the bridge structural form, how the form itself is conditioned by the structural materials, and how forces are measured with electromechanical instrumentation. The study includes fundamental notions of mechanics, strength of materials, structural behavior, instrumentation failure analysis, and design optimization. Working on teams, students use constructive experimental models as well as computer-aided programs to design, build, instrument, and test realistic bridge projects. This is a self-contained course open to all Rochester undergraduates.
Offered: Fall Spring

ME 106 ENGINEERING IN ANTIQUITY
Application of engineering principles and technology to the design and performance of engineering structures from antiquity to the pre-industrial world. Engineering principles (transfer of forces, momentum, and power), study of primary texts (in translation), and examination of existing structures/monuments. Primary texts include selections from Aristotle’s Mechanical Problems, Vitruvius’ Ten Books on Architecture, Leonardo’s Notebooks, Galileo’s Dialogues on Two New Sciences. Emphasis on engineering design of engineered structures from the Bronze Age to the 18th century. Topics: Evolution of engineered materials (metals, wood, stone, marble, concrete, composites) and limitations; Bronze Age fortifications; Structural design of
Greek temples; Roman aqueducts, siphons, and vaults; Force, power sources and transmission; Failure of materials; Lifting devices; Construction engineering; Columns, beams, vaults, trusses, frames; Instruments of warfare. Open to all undergraduates. No prerequisites.

**ME 107 MECHANICS & OPTICS IN ANTIQUITIES**
The basic principles of mechanics and optics as they developed in ancient Greece, Rome, China and Europe and the emergence of mechanics and optics prior to the industrial revolution. Examples: Law of the lever (Aristotle and Archimedes); Center of gravity (Archimedes and Galileo); Gears, metalworking, and the Antikythera mechanism; Hellenistic science; Medieval mechanics and optics; Mechanical designs of Leonardo da Vinci; Development of glass-making, eyeglasses, the telescope (Galileo, Kepler, Newton); Lens grinding and polishing; Dynamics and strength of materials (Galileo); The emergence of mechanics (Newton) and optics (Kepler). The course includes basic mechanics and optics; study of texts (in English translation); and study of artifacts and archaeological and historical discoveries. Open to all undergraduates. No prerequisites.

Offered: Spring

**ME 107W MECH & OPTICS IN ANTIQUITIES**
The basic principles of mechanics and optics as they developed in ancient Greece, Rome, China and Europe and the emergence of mechanics and optics prior to the industrial revolution. Examples: Law of the lever (Aristotle and Archimedes); Center of gravity (Archimedes and Galileo); Gears, metalworking, and the Antikythera mechanism; Hellenistic science; Medieval mechanics and optics; Mechanical designs of Leonardo da Vinci; Development of glass-making, eyeglasses, the telescope (Galileo, Kepler, Newton); Lens grinding and polishing; Dynamics and strength of materials (Galileo); The emergence of mechanics (Newton) and optics (Kepler). The course includes basic mechanics and optics; study of texts (in English translation); and study of artifacts and archaeological and historical discoveries. Upper level writing

**ME 108 Engineering and Architectural Heritage**
The aim of the course is to present the basics of structural engineering and its application for the preservation of architectural heritage. The course begins with an introduction to basic concepts of structural engineering. Then, the course examines the engineering developments of the main cultures, and states the general guidelines for the intervention and conservation of heritage buildings. Next, the main techniques for inspection, diagnosis and intervention are presented, including data processing tools and possibilities for structural analysis. The concepts presented in the course are finally used for carrying out a field project, which consists in the geometric, material survey, and finally the structural evaluation of a historical building in Rochester. Open to all undergraduates.

Offered: Fall

**ME 110 INTRODUCTION TO CAD AND DRAWING**
This course covers engineering drawing, and modeling using the Computer Aided Design software Pro/ENGINEER. Topics include orthographic projections, solid modeling, assemblies, and dimensioning. Students will complete the course with a fundamental ability to create and understand solid modeling, and engineering drawings using state of the art PC CAD software. Lectures will make use of a computer projection screen as well as individual computers for each student.

Offered: Fall Spring

**ME 120 ENGINEERING MECHANICS I**
Basic concepts of mechanics; units; forces; moments; force systems; equilibrium; vector algebra. Plane trusses; method of joints; method of sections; space trusses; frames and machines. Centroids of lines, areas, and volumes; center of mass. Distributed loads on beams; internal forces in beams; distributed loads on cables. Basic concepts of dry friction; friction in machines. Virtual work and potential energy methods.

Offered: Fall Spring

**ME 121 ENGINEERING MECHANICS II**
This course uses an engineering approach to the solution of dynamics problems with an emphasis on conceptual understanding. Topics include kinematics and kinetics of particles and rigid bodies.

Offered: Fall

**ME 123 THERMODYNAMICS**
Course Content: thermodynamic systems, properties, equilibrium, and processes; energy and the first law; properties of simple compressible substances; control volume analysis; steady and transient states; entropy and the second law, general thermodynamic relations.

Offered: Spring

ME 160 ENGINEERING COMPUTATION I

General engineering computations using Matlab. Programming basics, including: Functions, logic, looping, File manipulation and basic data structures. Applied topics will include: Number representation and error, root finding, interpolation, curve fitting, systems of linear equations, and data reduction and plotting (2D). Examples will be drawn from typical problems in the mechanical engineering curriculum.

Offered: Fall

ME 201 APPLIED BOUNDARY VALUE PROBLEMS

This course covers the classical partial differential equations of mathematical physics: the heat equation, the Laplace equation, and the wave equation. The primary technique covered in the course is separation of variables, which leads to solutions in the form of eigenfunction expansions. The topics include Fourier series, separation of variables, Sturm-Liouville theory, unbounded domains and the Fourier transform, spherical coordinates and Legendre’s equation, cylindrical coordinates and Bessel’s equation. The software package Mathematica will be used extensively. Prior knowledge of Mathematica is helpful but not essential. In the last two weeks of the course, there will be a project on an assigned topic. The course will include applications in heat conduction, electrostatics, fluid flow, and acoustics.

Offered: Fall

ME 202 INTRODUCTION TO APPLIED COMPLEX VARIABLES

Complex numbers and the complex plane; analytic functions; elementary functions; complex integration; series expansions; residue theory; multi-valued functions; conformal mapping. Applications: use of complex functions in oscillation theory; solution of Laplace's equation; evaluation of definite integrals by contour integration; series solutions of ordinary differential equations.

ME 204 MECHANICAL DESIGN

Description: The theory and application of structural mechanics to mechanical design. Topics include: matrix structural analysis and finite element techniques. Students will use the NASTRAN finite element program to solve a variety of design and analysis problems. The term project consists of a team competition to design, analyze build, and test a lightweight structure.

Offered: Fall

ME 205 ADVANCED MECHANICAL DESIGN

This is an applied course that teaches the student how to use engineering principles in the design of mechanical components and mechanical systems. Topics include: load determination, static and fatigue failure theories, design and analysis of machine components (e.g. shafts, gears, bearings, fasteners, etc.), and the mechanical design process. The student learns the mechanical design process through team based design activities. In particular, project teams will design, analyze, build, and test a working machine in a semester long project. Formal design reviews and engineering reports will be used to document results.

Offered: Spring

ME 206 Building Engineering and Technology in Antiquity

Engineering and technological problems involved in the design, construction, maintenance, and collapse of major buildings and infrastructural systems from antiquity to the pre-industrial world drawing material from case studies of relevant monuments primarily from Classical Rome and Greece, and the Middle Ages.

Offered: Spring

ME 206W BUILDING ENGRG TECHNOLOGY

ME 208 Structural Dynamic and Instrumentation on Architectural Heritage Buildings

The course aims at presenting concepts of structural dynamics in the context of architectural heritage buildings applications. The concepts of classical dynamics for single and multi degree of freedom systems are introduced. Then, the topics related to experimental dynamics, and the instrumentation for structural health monitoring of heritage buildings are presented. The concepts
studied in the course are finally used for carrying out a field project, which consists on performing experimental tests, and the determination of the response under working conditions of an existing structure in Rochester.

Offered: Fall

**ME 212 VISCO IN BIO TISSUES**

Viscoelastic materials have the capacity to both store and dissipate energy. As a result, properly describing their mechanical behavior lies outside the scope of both solid mechanics and fluid mechanics. This course will develop constitutive relations and strategies for solving boundary value problems in linear viscoelastic materials. In addition, the closely-related biphasic theory for fluid-filled porous solids will be introduced. An emphasis will be placed on applications to cartilage, tendon, ligament, muscle, blood vessels, and other biological tissues. Advanced topics including non-linear viscoelasticity, composite viscoelasticity and physical mechanisms of viscoelasticity will be surveyed.

**ME 213 MECHANICAL SYSTEMS**


Offered: Spring

**ME 222 INTRODUCTION TO ROBUST DESIGN & QUALITY ENGINEERING**

Definition and pursuit of "quality" as a design criterion. The concept of robust design. Selection of the quality characteristic, incorporation of noise, and experimental design to improve robustness. Analysis and interpretation of results.

Offered: Spring

**ME 223 HEAT TRANSFER**

Review of thermodynamic concepts; energy balances; heat transfer mechanisms. Steady-state heat conduction; concept of thermal resistance; conduction in walls, cylinders, and spheres; cooling fins. Transient heat conduction; lumped parameter systems; transient conduction in plane walls; transient conduction in semi-infinite solids. Numerical analysis of conduction; finite difference analysis; one-dimensional steady conduction; two-dimensional steady conduction; transient conduction. Fundamentals of convection; fluid flow and heat transfer; energy equation; convective heat transfer from flat plate; use of dimensional analysis. External forced convection; flow over flat plates; flow past cylinders and spheres; flow across tube banks. Internal forced convection; thermal analysis of flow in tubes; laminar flow in tubes; turbulent flow in tubes. Heat exchangers; overall heat transfer coefficient; log mean temperature analysis; effectiveness-NTU method.

Offered: Spring

**ME 225 INTRODUCTION TO FLUID DYNAMICS**

Fluid properties; fluid statics; kinematics of moving fluids; the Bernoulli equation and applications; control volume analysis; differential analysis of fluid flow; inviscid flow, plane potential flow; viscous flow, the Navier-Stokes equation; dimensional analysis, similitude; empirical analysis of pipe flows; flow over immersed bodies, boundary layers, lift and drag.

Offered: Fall

**ME 226 INTRODUCTION TO SOLID MECHANICS**


Offered: Spring

**ME 232 OPTO-MECHANICAL**

The mechanical design and analysis of optical components and systems will be studied. Topics will include kinematic mounting of optical elements, the analysis of adhesive bonds, and the influence of environmental effects such as gravity, temperature, and vibration on the performance of optical systems. Additional topics include analysis of adaptive optics, the design of lightweight mirrors, thermo-optic and stress-optic (stress birefringence) effects. Emphasis will be placed on integrated analysis which includes the data transfer between optical design codes and mechanical FEA codes. A term project is required for ME 432.

Offered: Spring
ME 241 FLUIDS LAB
Description: Laboratory course. Introductory Lecture(s) on lab practice and data analysis. The lab itself consists of two parts: The first part uses simple experiments to familiarize the student with computer data acquisitions and some basic instrumentation. In the second part, students (working in groups of three) perform independent experimental projects. The course has significant writing content and makes formal use of the Writing Center. In addition to written and oral laboratory reports, each group is expected to make a final poster presentation of its work.
Offered: Spring

ME 242 SOLIDS & MATERIALS LAB
In this course, you will apply previously learned theoretical concepts to practical problems and applications. In addition, you will learn experimental techniques and enhance your technical writing skills. This course has two parts, a series of small laboratory exercises and a project. During the semester, students will work in groups of three to complete the assigned work, labs, and reports. The lab section of the course is designed to present basic applied concepts that will be useful to a broad base of engineering problems. The project portion is where you will work on a more specific idea, tailored around your desired future goals.
Offered: Fall

ME 245 PRECISION INSTRUMENT DESIGN
This course focuses teaching the multidisciplinary aspects of designing complex, precise systems. In these systems, aspects from mechanics, optics, electronics, design for manufacturing/assembly, and metrology/qualification must all be considered to design, build, and demonstrate a successful precision system. The goal of this class is to develop a fundamental understanding of multidisciplinary design for designing the next generation of advanced instrumentation. This course is open to graduate students in engineering and physics backgrounds although it has a strong emphasis on mechanical engineering and systems engineering topics. This course is open to undergraduates who are in their senior year.
Offered: Fall

ME 251 HEAT POWER APPLICATION
Review of thermodynamics, vapor power systems, gas power systems, refrigeration and heat pumps, internal combustion engines, nozzles and diffusers, compressors and turbines, aircraft propulsion, cost analysis of power production
Offered: Fall

ME 253 INTRODUCTION TO NUCLEAR ENGINEERING
A first course in nuclear engineering with emphasis on the fundamental physics and technology of modern water-cooled power reactors, the nuclear fuel cycle, and the regulatory environment surrounding nuclear power in the United States
Offered: Spring

ME 254 FINITE ELEMENTS
This course provides a thorough grounding on the theory and application of linear steady-state finite element method (FEM) applied to solid mechanics. Topics include: review of matrix algebra and solid mechanics, Principle of Minimum Potential Energy, Rayleigh Ritz Method, FEM computational procedures, isoparametric shape functions and numerical integration for 1D, 2D, and 3D elements, error estimation and convergence, and the demonstration of FEM best practices using a commercial FEM code. A semester project that involves coding FEM software in Matlab is required for graduate students.
Offered: Spring

ME 260 ENGINEERING COMPUTATION II
Advanced engineering computations using Matlab. This course will include the following programming topics: accelerated review of ME160, 3D plotting and animation, Debugging and Efficiency as well as some GUI programming. The rest of the course will be focused on numerical topics important for the mechanical engineering student including the following topics as time permits: numerical integration and differentiation, eigenvalues and eigenvectors, non-linear systems, solution of ODEs and PDEs.
Offered: Spring

ME 280 INTRODUCTION TO MATERIALS SCIENCE
Properties of engineering materials including metals, alloys, ceramics, polymers and composites. Relationship of properties to the materials microstructure including atomic bonding, atomic arrangement, crystal structure, co-existing phases, interfaces, defects and impurities. Processing techniques for altering the microstructure and properties. Offered: Fall

ME 281 MECH BEHAVIOR OF SOLIDS
Description: The mechanical response of crystalline (metals, ceramics, semiconductors) and amorphous solids (glasses, polymers) and their composites in terms of the relationships between stress, strain, damage, fracture, strain-rate, temperature, and microstructure. Topics include: (1) Material structure and property overview. (2) Isotropic and anisotropic elasticity and viscoelasticity. (3) Properties of composites. (4) Plasticity. (5) Point and line defects. (6) Interfacial and volumetric defects. (7) Yield surfaces and flow rules in plasticity of polycrystals and single crystals. (8) Macro and micro aspects of fractures in metals, ceramics and polymers. (9) Creep and superplasticity. (10) Deformation and fracture mechanism maps. (11) Fatigue damage and failure; fracture and failure in composites (If time permits).
Offered: Spring

ME 291 VEHICLE DESIGN AND DYNAMICS
Engineering design aspects of car dynamics, with hands-on workshop for vehicle measurements and data. Tire behavior, center of gravity, vehicle axis systems and SAE tire axis system, stability and control, break system, suspension, steering. Applications to SAE Mini Baja design. Course offered August 30th through October 30th.

ME 311 ENGINEERING COMPUTATION
Engineering computation and algorithms using MatLab. Solution of systems of linear equations, numerical integration, integration of differential equations, boundary value problems. Examples drawn from the mechanical engineering curriculum (statics, dynamics, fluid mechanics, mechanics of materials, heat transfer, mechanical systems.)
Offered: Spring

ME 386V VISITING STUDENT IN MECH ENG

ME 390 SUPERVISED TEACHING

ME 391 INDEPENDENT READING

ME 391W INDEPENDENT READING

ME 392 SPECIAL TOPICS

ME 393 SPECIAL ESSAY OR THESIS

ME 393W SENIOR PROJECT

ME 394 INTERNSHIP

ME 395 INDEPENDENT RESEARCH

ME 395W INDEPENDENT RESEARCH

ME 396 SPECIAL PROJECTS

ME 400 APPLIED BOUNDARY VALUE PROB
This course covers the classical partial differential equations of mathematical physics: the heat equation, the Laplace equation, and the wave equation. The primary technique covered in the course is separation of variables, which leads to solutions in the form of eigenfunction expansions. The topics include Fourier series, separation of variables, Sturm-Liouville theory, unbounded domains and the Fourier transform, spherical coordinates and Legendre’s equation, cylindrical coordinates and Bessel’s equation.
The software package Mathematica will be used extensively. Prior knowledge of Mathematica is helpful but not essential. In the last two weeks of the course, there will be a project on an assigned topic. The course will include applications in heat conduction, electrostatics, fluid flow, and acoustics.

Offered: Fall

**ME 401 MATHEMATICAL METHODS**

Mathematical methods for obtaining approximate analytical solutions to differential equations that cannot be solved exactly. Particular attention will be given to the following methods: Boundary Layer Theory, WKB Theory, Multiple-Scale Analysis, Asymptotic Expansion of Integrals (method of stationary phase, method of steepest descents), Renormalization group.

Offered: Spring

**ME 402 PARTIAL DIFFERENTIAL EQUATIONS**

The course covers first-order equations and the theory of characteristics, classification of second-order linear equations, method of separation of variables, Green’s functions, and some numerical methods.

**ME 404 COMPUTATIONAL METHODS APPLIED TO BIOLOGICAL SYSTEMS**

The course deals with computational methods to analytically intractable mathematical problems in biological research. For the first half of the course, general numerical analysis topics are reviewed such as linear algebra, ODE and PDE. Through homework assignments, students write their own computer code. Sufficient sample solutions are given to practice various numerical methods within limited time. The rest of the course is comprised of case studies and projects. Examples of computational analyses are drawn from life science problems such as biodynamics of human loco motion, ion channel kinetics, ionic diffusion, and finite element analysis of cells/tissues. For final project, students bring their own research problems, express them in mathematical equations, solve them using custom written computer programs and interpret the solutions.

Offered: Spring

**ME 408 PHASE TRANSFORMATION**

How and why atomic rearrangements leading to phase transformations occur and how they are associated with kinetic and crystallographic features; liquid-solid and solid-solid transformations, nucleation theory, growth, massive and martensitic transformations.

Offered: Fall

**ME 412 VISCO IN BIO TISSUES**

**ME 424 INTRODUCTION ROBUST DESIGN & QUALITY ENGINEERING**

Definition and pursuit of “quality” as a design criterion. The concept of robust design. Selection of the quality characteristic, incorporation of noise, and experimental design to improve robustness. Analysis and interpretation of results.

Offered: Spring

**ME 431 COMPUTATIONAL METHODS**

**ME 432 OPTO-MECHANICAL**

The mechanical design and analysis of optical components and systems will be studied. Topics will include kinematic mounting of optical elements, the analysis of adhesive bonds, and the influence of environmental effects such as gravity, temperature, and vibration on the performance of optical systems. Additional topics include analysis of adaptive optics, the design of lightweight mirrors, thermo-optic and stress-optic (stress birefringence) effects. Emphasis will be placed on integrated analysis which includes the data transfer between optical design codes and mechanical FEA codes. A term project is required for ME 432.

Offered: Spring

**ME 434 INTRODUCTION TO PLASMA PHYSICS I**

ME 435 INTRODUCTION TO PLASMA PHYSICS II
Vlasov equation, Landau damping, VanKampen modes, two-stream instability, micro-instabilities, introduction to kinetic theory, shield clouds, Thomson scattering, and the Fokker-Planck equation.

ME 437 INCOMPRESSIBLE FLOW
The study of incompressible flow covers fluid motions which are gentle enough that the density of the fluid changes little or none. Topics: Conservation equations, Bernoulli’s equation, the Navier-Stokes equations. Inviscid flows; vorticity; potential flows; stream functions; complex potentials. Viscosity and Reynolds number; some exact solutions with viscosity; boundary layers; low Reynolds number flows. Waves.

ME 439 TURBULENCE
This is an introduction to turbulence theory and modeling for graduate students in engineering and the physical sciences. This course stresses intuitive physical understanding, mathematical analysis techniques, and numerical methodologies. It will highlight applications in various disciplines, including aeronautics, fusion sciences, geophysics and astrophysics.

ME 440 MECHANICS OF STRUCTURES
Application of energy methods to obtain the governing equations and approximate solutions to problems involving elastic structures. Static models will be developed to determine the maximum displacements and stresses for structures subjected to forces. Dynamic models will be developed to determine approximate natural frequencies and mode shapes. Rayleigh-Ritz and Galerkin approximation methods will be covered.

ME 441 FINITE ELEMENTS
This course provides a thorough grounding on the theory and application of linear finite element analysis in solid mechanics and related disciplines. Topics: structural matrix analysis concepts and computational procedures; shape functions and element formulation methods for 1-D, 2-D problems; variational methods, weighted residual methods and Galerkin techniques; isoparametric elements; error estimation and convergence; global analysis aspects. Term project and homework require computer implementation of 1-D and 2-D finite element procedures using Matlab. Term project not required for ME254

ME 443 APPLIED VIBRATION ANALYSIS
Vibrations of both discrete (one, two, and many degrees-of-freedom systems) and continuous (strings, beams, membranes, and plates) will be studied. Focus is on free and forced vibration of undamped and damped structures. Analytical, numerical, and experimental methods will be covered. Approximate methods (Rayleigh, Rayleigh-Ritz) for obtaining natural frequencies and mode shapes will also be introduced.

ME 444 CONTINUUM MECHANICS
Course Description: The mechanics of continuous media. The basic notations and concepts in applied mechanics will be covered. These concepts are the foundation for both solid and fluid mechanics and applications in both of these areas will be used as examples. The course will include 1) indicial notation and tensor analysis, 2) concepts of stress, 3) both Eulerian and Lagrangian descriptions of deformation and strain, 4) conservation of mass, momentum, energy, and 5) constitutive equations to describe material response.

ME 445 PRECISION INSTRUMENT DESIGN
This course focuses teaching the multidisciplinary aspects of designing complex, precise systems. In these systems, aspects from mechanics, optics, electronics, design for manufacturing/assembly, and metrology/qualification must all be considered to design, build, and demonstrate a successful precision system. The goal of this class is to develop a fundamental understanding of multidisciplinary design for designing the next generation of advanced instrumentation.

Offered: Fall
ME 451 Characterization Methods in Materials
Crystallography, symmetry elements, space groups, x-ray diffraction from single crystals and powder patterns. Fourier transforms, grain size effects, residual stresses and textures, diffuse and small angle scattering, Bragg and Laue x-ray diffraction topography, thin films and epitaxial layers. Modern x-ray software for diffraction analysis including textures, residual stresses, pattern identification and Rietveld applications.
Offered: Fall

ME 453 INTRO TO NUCLEAR ENGINEERING
A first course in nuclear engineering with emphasis on the fundamental physics and technology of modern water-cooled power reactors, the nuclear fuel cycle, and the regulatory environment surrounding nuclear power in the United States

ME 458 NONLINEAR FINITE ELEMENT
The theory and application of nonlinear FE methods in solid and structural mechanics, and biomechanics. Topics: review and generalization of linear FE concepts, review of solid mechanics, nonlinear incremental analysis, FE formulations for large displacements and large strains, nonlinear constitutive relations, incompressibility and contact conditions, hyperelastic materials, damage plasticity formulation, solution methods, explicit dynamic formulation.
Offered: Spring

ME 460 THERMODYNAMICS OF SOLIDS
Review of basic thermodynamic quantities and laws; equations of state; statistical mechanics; heat capacity; relations between physical properties; Jacobian algebra; phase transformations, phase diagrams and chemical reactions; partial molar and excess quantities, phases of variable composition; free energy of binary and multicomponent systems; surfaces and interfaces. The emphasis is on the physical and chemical properties of micro and nano solids including stress and strain variables.
Offered: Spring

ME 461 FRACTURE & ADHESION
Stress fields near cracks in linear elasticity. Linear elastic fracture mechanics. Griffith fracture theory. K and J approaches to fracture. Failure analysis and fracture stability; crack tip deformation, crack tip shielding. Crack nucleation. Adhesion. Low cycle fatigue; fatigue crack propagation. Emphasis on the role of microstructure in determining fracture, adhesion and fatigue behavior of materials; improving fracture toughness for advanced materials especially ceramics and polymers. This course is taught at a level that brings the student to the level of current research.
Offered: Fall

ME 462 SOLIDS & MATERIALS LAB
Lecture and laboratory. Lecture: engineering problem solving methodologies and review of basic statistics. Laboratory: dealing with solids/materials instrumentation. Students work in groups of three. Graduate students work alone on independent projects.
Offered: Fall

ME 463 MICROSTRUCTURES
Offered: Spring

ME 466 CORROSION
A scientific approach to understanding the oxidation and dissolution of metals related to corrosion control, electrical energy generation, metallic plating, and energy storage. Characterization of corrosion types. Interfacial electrochemical mechanisms, thermodynamics, electrode potentials, interphases, and Pourbaix diagrams. Kinetics of free corrosion and electron limited corrosion including polarizations and overpotentials. Passivity. Tafel behavior with Butler-Volmer interpretations. Experimental measurements used in corrosion research and in battery research. Corrosion in iron based and aluminum based aqueous systems. Corrosion in lithium and sodium based non-aqueous systems. Effects of stress, including mechanisms of stress corrosion cracking related to metallurgical structure and role of the electrical double layer. Catalytic behavior of free surface nanostructures intended to catalyze oxygen reactions and ease barriers to metallic plating and ionic dissolution at polar electrolyte interfaces.
ME 481 MECH BEHAVIOR OF SOLIDS
The mechanical response of crystalline (metals, ceramics, semiconductors) and amorphous solids (glasses, polymers) and their composites in terms of the relationships between stress, strain, damage, fracture, strain-rate, temperature, and microstructure. Offered: Spring

ME 482 BIOSOLID MECHANICS

ME 483 BIOSOLID MECHANICS
Application of engineering mechanics to biological tissues with an emphasis on orthopedic biomechanics. Includes an investigation of structure-function relationships in cartilage, bone, soft tissues and blood cells, as well as static analyses of the musculoskeletal system at the joint level. Techniques for modeling complex biological material properties such as composites, poroelasticity, finite elasticity, and viscoelasticity will also be presented. Offered: Fall

ME 491 MASTER'S READING COURSE ME

ME 492 BUILDING STRUCTURAL DYNAMICS
Precision Engineering is used to design and develop sensors, systems, and instruments which are generally multidisciplinary and require simultaneous consideration of many facets to achieve a desired specification. This includes systems like displacement and surface interferometers, high speed machining centers, lithography tools, and diamond turning machines. Precision engineering is used to push the current state of the art into new frontiers. The goal of this class is to develop a fundamental understanding of the tools and techniques used for designing, assessing, and ultimately implementing precision systems.

ME 493 MASTER'S ESSAY

ME 494 MASTERS INTERNSHIP

ME 495 MASTER'S RESEARCH IN ME

ME 496 CURRNT RESEARCH IN MECHANICS

ME 532 MAGNETOHYDRO DYNAMICS
A general introduction to magnetohydrodynamics (MHD), with applications in engineering and astrophysics. The MHD approximation, basic equations, boundary conditions. The induction equation, the magnetic Reynolds number; perfectly conducting fluids, frozen-in magnetic fields; kinematic MHD, combined convection and diffusion of magnetic fields. Magnetic equilibria, magneto-atmospheres, magnetic buoyancy; force-free fields. Alfvén waves, magneto-acoustic waves, magneto-atmospheric waves, MHD shock waves. Magnetic flux tubes: tubes: waves, siphon flows. Viscous flows: MHD channel flows, Hartmann boundary layers, electromagnetic pumps and flow meters; vorticity in MHD flows. Stability of magnetohydrostatic configurations: kink and sausage instabilities, convective instability. Dynamo theory: Cowling’s theorem, the mean-field dynamo equations, the alpha effect, solar and stellar dynamos, interface dynamos, nonlinear dynamos. Offered: Spring

ME 535 LASER PLASMA INTERACTIONS

ME 536 HYDRODYNAMIC STABILITY

ME 541 NANOSCALE CRYSTALLINE DEFECT

University of Rochester
ME 545 ADV TOPICS IN PLASMA PHYSICS
The course will discuss the physical principles of selected diagnostics used for plasma measurements. This includes measurements of density, temperature, current, magnetic field, refractive index, emitted and scattered electromagnetic radiation, radiation properties etc. The emphasis lays on a systematic presentation from first principles that will help to form the basis for gaining understanding of many applications in plasma physics. We will concentrate on laboratory plasma diagnostics from the perspective of controlled fusion research.

ME 591 PHD READING COURSE IN ME

ME 594 RESEARCH INTERNSHIP

ME 595 PHD RESEARCH IN ME

ME 595A PHD RESEARCH IN ABSENTIA

ME 895 CONT OF MASTER'S ENROLLMENT

ME 897 MASTERS DISSERTATION

ME 899 MASTER'S DISSERTATION

ME 899A MSTRS DISERTATN IN ABSENTIA

ME 985 LEAVE OF ABSENCE

ME 986V FULL TIME VISITING STUDENT

ME 987V PART TIME VISITING STUDENT

ME 995 CONT OF DOCTORAL ENROLLMENT

ME 997 DOCTORAL DISSERTATION

ME 997A DOCT DISSERTATN IN ABSENTIA

ME 999 DOCTORAL DISSERTATION

ME 999A DOCT DISSERTATN IN ABSENTIA

ME 999B IN-ABSENTIA ABROAD

MSC 202 INTRO TO MATERIALS SCIENCE
Properties of engineering materials including metals, alloys, ceramics, polymers and composites. Relationship of properties to the materials microstructure including atomic bonding, atomic arrangement, crystal structure, co-existing phases, interfaces, defects and impurities. Processing techniques for altering the microstructure and properties.

MSC 230 THERMO & STAT MECHANICS
Multiplicity of physical states, equilibrium entropy and temperature, Boltzmann factor and partition function, statistical approach to free energy, chemical potential, distribution functions for ideal classical and quantum gases. Applications to chemical reactions, thermal engines, equations of state and phase transitions, applications.

MSC 307 SEM PRACTICUM
Overview of techniques for using the SEM (Scanning Electron Microscope) and Scanning Probe (AFM, STM) and analyzing data. Students perform independent lab projects by semester's end.
MSC 401 PHASE TRANSFORMATION
How and why atomic rearrangements leading to phase transformations occur and how they are associated with kinetic and crystallographic features; liquid-solid and solid-solid transformations, nucleation theory, growth, massive and martensitic transformations.

MSC 402 NANO SCALE CRYSTALLINE DEFECT
An introduction to the theory and practical application of several major techniques used in the structural characterization of biological macromolecules. These methods include: X-ray crystallography, Small Angle X-ray Scattering, Spectroscopic and Calorimetric Techniques, NMR and Comparative Modeling. The goal is to enable non-specialists to become conversant in the language and principles of the field, as well as to understand the strengths and limitations of various techniques.

MSC 403 Characterization methods in Materials Science- Diffraction
Crystallography, symmetry elements, space groups, x-ray diffraction from single crystals and powder patterns. Fourier transforms, grain size effects, residual stresses and textures, diffuse and small angle scattering, Bragg and Laue x-ray diffraction topography, thin films and epitaxial layers. Modern x-ray software for diffraction analysis including textures, residual stresses, pattern identification and Rietveld applications. (same as ME 451)

MSC 404 BIOPHYSICAL CHEMISTRY II

MSC 405 THERMODYNAMICS OF SOLIDS
Review of basic thermodynamic quantities and laws; equations of state; statistical mechanics; heat capacity; relations between physical properties; Jacobian algebra; phase transformations, phase diagrams and chemical reactions; partial molal and excess quantities, phases of variable composition; free energy of binary and multicomponent systems; surfaces and interfaces. The emphasis is on the physical and chemical properties of solids including stress and strain variables.

MSC 407 SOLIDS & MATERIALS LAB
Description: Lecture and laboratory. Lecture: engineering problem solving methodologies and review of basic statistics (homework and a midterm). Laboratory: small (one week) laboratories dealing with solids/materials instrumentation (completion of several required), and an independent project (including a written proposal, a proposal presentation, experimentation with equipment building and testing, 3 update presentations, a final presentation, a final report and a poster presentation). Most students will work in groups of three during much of the class. Graduate students work alone on independent projects. (same as ME 462)

MSC 408 MICROSTRUCTURE

MSC 409 MECH BEHAVIOR OF SOLIDS
The mechanical response of crystalline (metals, ceramics, semiconductors) and amorphous solids (glasses, polymers) and their composites in terms of the relationships between stress, strain, damage, fracture, strain-rate, temperature, and microstructure. (same as ME 481)

MSC 413 ENGINEERING OF SOFT MATTER
This course will provide an overview of several contemporary research topics pertaining to structured organic materials. Lectures will focus on intermolecular interactions and the thermodynamics of self-assembly. Additional lectures will introduce molecular crystals, polymer crystallinity, liquid crystals, self-assembled monolayers, surfactants, block copolymers, and biomimetic materials. (same as CHE 413)

MSC 416 X-RAY CRYSTALLOGRAPHY
2 credit hour course- Students will learn the basic principles of X-ray diffraction, symmetry, and space groups. Students will also experience the single crystal diffraction experiment, which includes crystal mounting, data collection, structure solution and refinement, and the reporting of crystallographic data. (same as CHM 416).
MSC 418 STATISTICAL MECHANICS

MSC 420 INTRO CONDENSED MATTER PHY
An emphasis on the wide variety of phenomena that form the basis for modern solid state devices. Topics include crystals; lattice vibrations; quantum mechanics of electrons in solids; energy band structure; semiconductors; superconductors; dielectrics; and magnets. (same as PHY 420)

MSC 421 BIOMEDICAL NANOTECH

MSC 423 SEMICONDUCTOR DEVICES

MSC 424 INTO ROBST DSGN QUAL ENG

MSC 432 OPTOMECHANICS
The mechanical design and analysis of optical components and systems will be studied. Topics will include kinematic mounting of optical elements, the analysis of adhesive bonds, and the influence of environmental effects such as gravity, temperature, and vibration on the performance of optical systems. Additional topics include analysis of adaptive optics, the design of lightweight mirrors, thermo-optic and stress-optic (stress birefringence) effects. Emphasis will be placed on integrated analysis which includes the data transfer between optical design codes and mechanical FEA codes. (same as ME 432)

MSC 433 POLYMER SCIENCE & ENGINEERING
Mechanisms and kinetics of polymerization reactions; solution, suspension, and emulsion polymerization processes; thermodynamics of polymer solutions; the Flory-Huggins theory; principles and practice of membrane osmometry, light scattering, viscometry, and size exclusion chromatography; polymer rheology and mechanical properties; polymer morphology and phase transitions. (same as CHE 486)

MSC 437 NANOPHOT/NANOMECH DEVICES

MSC 442 MICROBIOMECHANICS

MSC 445 BIOMATERIALS

MSC 447 OPT & LIQUID CRYSTALS FOR CHE

MSC 451 BIOMEDICAL ULTRASOUND

MSC 455 THERMODYNAMICS & STAT MECH

MSC 456 CHM BONDS: FROM MOLCLS TO MAT
An introduction to the electronic structure of extended materials systems from both a chemical bonding and a condensed matter physics perspective. The course will discuss materials of all length scales from individual molecules to macroscopic three-dimensional crystals, but will focus on zero, one, and two dimensional inorganic materials at the nanometer scale. Specific topics include semiconductor nanocrystals, quantum wires, carbon nanotubes, and conjugated polymers. (same as CHM 456)

MSC 458 ELECTROCHEM & ENGG & FUEL CELL
The course will concentrate on presenting the principles of electrochemistry and electrochemical engineering, and the design considerations for the development of fuel cells capable of satisfying the projected performance of an electric car. The course is expected to prepare you for the challenges of energy conversion and storage and the environment in the 21st century. (same as CHE 458)

MSC 460 SOLAR CELLS

MSC 462 CELL & TISSUE ENGINEERING
MSC 463 NMR SPECTROSCOPY

MSC 464 FUNDAMENTALS OF LASERS
Fundamentals and applications of laser systems, including optical amplification, cavity design, beam propagation and modulation. (For non-Optics/Physics graduate students) (same as OPT 424)

MSC 465 PRINCIPLES OF LASERS

MSC 466 CORROSION

MSC 469 BIOTECHNOLOGY & BIOENGINEERING

MSC 470 OPT PROPERTIES OF MATERIALS
Optical properties of electrons, phonons, plasmons, and polaritons in semiconductors, metals and insulators are detailed. (same as OPT 421)

MSC 471 FABRICATION AND TESTING
Characteristics and properties of optical glass and the methods for fabricating high quality surfaces and components. Lectures will describe applications of such glass in laser systems and nonlinear optics. (same as OPT 443)

MSC 472 BIOINTERFACES

MSC 473 INTRO TO OPTO-ELECTRONICS
Light propagation in restricted geometries including waveguides and optical fibers. Dispersion and loss in linear and nonlinear pulse propagation. Coupling between passive and between active and passive elements. (same as OPT 226)

MSC 476 POLYMER SYNTHESIS

MSC 482 PROC MICROELEC DEVICE
This course features an overview of processes used in the fabrication of microelectronic devices, with emphasis on chemical engineering principles and methods of analysis. Modeling and processing of microelectronic devices. Includes introduction to physics and technology of solid state devices grade silicon, microlithography, thermal processing, chemical vapor deposition, etching and ion implantation and damascene processing. (same as CHE 482)

MSC 485 THERMODYNAMICS & STAT MECH

MSC 491 MASTERS READING COURSE

MSC 492 SPECIAL TOPICS

MSC 493 MASTERS ESSAY

MSC 495 MASTERS RESEARCH

MSC 496 MSC GRADUATE SEMINAR

MSC 497 TEACHING MATERIALS SCIENCE

MSC 507 SEM PRACTICUM
Overview of techniques for using the SEM (Scanning Electron Microscope) and Scanning Probe (AFM, STM) and analyzing data. Students perform independent lab projects by semester’s end. (same as OPT 507)

MSC 520 SPIN BASED ELECTRONICS
Basic physics of magnetism and of quantum mechanical spin. Aspects of spin transport with emphasis on spin-diffusion in semiconductor. (same as ECE 520)

MSC 591 READING COURSE IN MAT SCIENC
MSC 591A INDEPENDNT STUDY IN ABSENTIA
MSC 592 SPECIAL PROJECTS
MSC 594 RESEARCH INTERNSHIP
MSC 595 RES IN MATERIALS SCIENCES
MSC 595A PHD RESEARCH IN ABSSENDIA
MSC 895 CONT OF MASTER'S ENROLLMENT
MSC 897 MASTER'S DISSERTATION
MSC 899 MASTER'S DISSERTATION
MSC 985 LEAVE OF ABSENCE
MSC 995 CONT OF DOCTORAL ENROLLMENT
MSC 997 DOCTORAL DISSERTATION
MSC 997A DOCT DISSERTATN IN ABSENTIA
MSC 999 DOCTORAL DISSERTATION
MSC 999A DOCT DISSERTATN IN ABSENTIA
MSC 999B DOC DISS IN-ABSENTIA ABROAD

MTH 130 EXCURSIONS IN MATH
The nature of mathematics and its application. Emphasis on concepts and understanding rather than acquisition of techniques. Intended for concentrators in the humanities and social sciences. Offered: Spring

MTH 140A CALCULUS WITH FOUNDATIONS I
Covers all the material in MTH 141 together with a thorough presentation of the standard precalculus material. Intended for students who lack the algebra and trigonometry skills necessary to perform successfully in MTH 141. MTH 140A (Fall) and MTH 141A (Spring). This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time. Offered: Fall

MTH 141 CALCULUS I
Analysis of the elementary real functions: algebraic, trigonometric, exponentials and their inverses and composites. Their graphs, derivatives, and integrals. Mean value theorem, maxima and minima, curve plotting. MTH 141, 142, and 143 is a three-semester sequence that covers, at a slower pace, exactly the same material as the two-semester sequence, MTH 161 and 162. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time. This course cannot be taken for credit after completing any of MTH 141A, 142, 143, 161, or 162. Students who want to switch calculus sequence, for example from the 160s sequence to the
140s sequence, should first speak with Advising Services. Students who want to repeat a course for a grade need to secure the approval of the Dean by meeting with a professional adviser in Advising Services.

**MTH 141A CALCULUS WITH FOUNDATIONS**
This course is a continuation of MTH 140A. It combines and integrates the learning of calculus together with precalculus mathematics. MTH 141A (together with its prerequisite MTH 140A) covers all the material in MTH 141, together with a thorough presentation of the standard 'precalculus' material. MTH 140A is a strict prerequisite for this course. This course cannot be taken for credit after completing any of MTH 141, 142, 143, 161, or 162.

**Offered:** Spring

**MTH 142 CALCULUS II**
This course will consist of applications of the finite integrals, techniques of integration, calculus of the transcendental functions, improper integrals and the use of l'Hopital's rule. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time. This course cannot be taken for credit after completing MTH 143 or 162. Students who want to switch calculus sequence, for example from the 160s sequence to the 140s sequence, should first speak with Advising Services. Students who want to repeat a course for a grade need to secure the approval of the Dean by meeting with a professional adviser in Advising Services.

**Offered:** Fall Spring Summer

**MTH 143 CALCULUS III**
This is the third semester of a three-semester calculus sequence. Topics include improper integrals, infinite sequences and series, Taylor's series in one variable. Plane curves, parametric equations, polar coordinates, arc length. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time. This course cannot be taken for credit after completing MTH 162. Students who want to switch calculus sequence, for example from the 160s sequence to the 140s sequence, should first speak with Advising Services. Students who want to repeat a course for a grade need to secure the approval of the Dean by meeting with a professional adviser in Advising Services.

**Offered:** Fall Spring Summer

**MTH 150 DISCRETE MATHEMATICS**
Logic, functions, algorithms, mathematical reasoning, mathematical induction, recurrence relations, techniques of counting, equivalence relations, graphs, trees. Required for Computer Science majors. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

**Offered:** Fall Spring

**MTH 150A DISCRETE MATH MODULE**
Passing the course will grant a waiver to the MTH 150 requirement for the Computer Science program, but does not fulfill any other requirements that MTH 150 may fulfill. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

**Offered:** Fall Spring

**MTH 161 CALCULUS IIA**
Elementary real functions: algebraic, trionometric, exponentials and their inverses and composites; their graphs, derivatives and integrals; limits, l'Hopital's rules, Mean value theorem, maxima and minima, curve plotting. The fundamental theorem of calculus, with geometric and physical applications. (Fall and Spring) This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time. This course cannot be taken for credit after completing any of MTH 141, 142, 143, or 162. Students who want to switch calculus sequence, for example from the 160s sequence to the 140s sequence, should first speak with Advising Services. Students who want to repeat a course for a grade need to secure the approval of the Dean by meeting with a professional adviser in Advising Services.

**Offered:** Fall Spring

**MTH 162 CALCULUS IIA**
Techniques of integration, improper integrals, applications to geometry and physics. Infinite series, Taylor series in one variable. Plane curves, parametric equations, polar coordinates, arc length. Prerequisite: MTH 161 or equivalent. (Fall and Spring) NOTE: Either MTH 164, 163, or 165 can be taken after MTH 162 or 143. This course uses the Tuesday/Thursday 08:00-09:30am
Common Exam time. This course cannot be taken for credit after completing MTH 143. Students who want to switch calculus sequence, for example from the 160s sequence to the 140s sequence, should first speak with Advising Services. Students who want to repeat a course for a grade need to secure the approval of the Dean by meeting with a professional adviser in Advising Services.

Offered: Fall Spring

**MTH 163 ORDINARY DIFFERENTIAL EQUATIONS I**
This course concentrates on the foundations of the subject, emphasizing those techniques which are important in physics and engineering. The emphasis in this course, as in the other calculus courses, is on learning techniques for solving, or at least understanding, certain equations (which occur frequently in physics and engineering), rather than on the theoretical aspects of the subject. Topics covered: first order differential equations, linear equations, and systems with constant coefficients, solutions in series, phase plane analysis and stability.

Offered: Fall Spring

**MTH 164 MULTIDIMENSIONAL CALCULUS**
Differentiation and linear approximation, extrema, Taylor series. Line, surface, and volume integrals; coordinate changes, Jacobians. Divergence theorem, Stokes’ theorem. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

Offered: Fall Spring Summer

**MTH 165 LINEAR ALGEBRA WITH DIFFERENTIAL EQUATIONS**
Matrices, vector spaces and linear transformations; differential equations: first-order, linear with constant coefficients, and linear systems; applications to science and engineering. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

Offered: Fall Spring Summer

**MTH 171 HONORS CALCULUS I**
Covers the material of MTH 161-165 in greater depth from the standpoint of both theory and applications. Students completing this sequence successfully will have met the requirements of MTH 235 and can begin taking upper-level courses immediately. Credit: 5 hours for each course in the 171-174 sequence. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

**MTH 172 HONORS CALCULUS II**
This course is a continuation of MTH 171.

Offered: Spring

**MTH 172Q HONORS CALCULUS II**
This is the second semester of the honors calculus sequence, covering the material from MTH 161, MTH 162, MTH 163, and MTH 164 in greater depth from the standpoint of both theory and application. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

Offered: Spring

**MTH 173 HONORS CALCULUS III**
Credit: 5 hours for each course in this sequence. An honors sequence covering the material of MTH 161-165 in greater depth from the standpoint of both theory and applications. Students completing this sequence successfully will have met the requirements of MTH 235 and can begin taking upper-level courses immediately. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

**MTH 174 HONORS CALCULUS IV**
This course is a continuation of MTH 173.

Offered: Spring

**MTH 174Q HONORS CALCULUS IV**
This is the last semester of the honors sequence of MTH 171, MTH 172, MTH 173, and MTH 174. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

Offered: Spring

**MTH 190 TOPICS IN PROBLEM SOLVING**
General techniques and approaches to solving difficult nonstandard problems such as those on the Putnam examination.

Offered: Fall

**MTH 200 TRANSITION TO HIGHER MATH**
Techniques and methods of proof used in mathematics and computer science. Logical reasoning, mathematical induction, relations, functions. Applications to group theory or real analysis. A significant focus of this course is developing proof writing skills, which are central to the transition to higher mathematics. This course partially satisfies the upper-level writing requirement in mathematics.

Offered: Fall Spring

**MTH 200W TRANSITION TO HIGHER MATH**
Techniques and methods of proof used in mathematics and computer science. Logical reasoning, mathematical induction, relations, functions. Applications to group theory or real analysis. A significant focus of this course is developing proof writing skills, which are central to the transition to higher mathematics. This course partially satisfies the upper-level writing requirement in mathematics.

Offered: Fall Spring

**MTH 201 INTRODUCTION TO PROBABILITY**
Probability spaces; combinatorial problems; random variables and expectations; discrete and continuous distributions; generating functions; independence and dependence; binomial, normal, and Poisson laws; laws of large numbers. Required by Electrical and Computer Engineering majors. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

Offered: Fall

**MTH 202 INTRODUCTION TO STOCHASTIC PROCESSES**
Theory and applications of random processes, including Markov chains, Poisson processes, birth-and-death processes, random walks.

**MTH 203 INTRODUCTION TO MATH STATISTICS**

Offered: Spring

**MTH 208 OPERATIONS RESEARCH I**
Linear and nonlinear programming, simplex method, duality theory, sensitivity analysis, shipping and assignment problems, Karmakar's algorithm, genetic algorithms, game theory, genetic algorithms, flow problems.

Offered: Fall

**MTH 210 INTRODUCTION TO FINANCIAL MATHEMATICS**
Mathematical concepts and techniques underlying finance theory; arbitrage pricing theory and option pricing. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.

Offered: Fall

**MTH 210H INTRO TO FINANCIAL MATH**
Honors version of MTH 210.
MTH 215  FRACIALS & CHAOTIC DYNAMICS
Fractal geometry with applications to chaos theory and related computer software.
Offered: Fall

MTH 217  MATHEMATICAL MODELING IN POLITICAL SCIENCE
Elementary game theory with applications: Nash equilibria, prisoner's dilemma, chicken; measures of voting power, social choice, Arrow's Theorem.
Offered: Fall

MTH 218  INTRODUCTION TO MATHEMATICAL MODELS IN LIFE SCIENCE
This course is aimed at building problem-solving ability in students through the development of mathematical models for certain real-life situations in the biological sciences. Models treated cover a variety of phenomena both discrete and continuous, linear and non-linear, deterministic and stochastic. Some topics that might be treated are Leslie Matrices in Demographics, Exponential and Logistic growth, Gompertz growth in tumors, Hardy-Weinberg Law in population genetics, Lotka-Volterra predator-prey systems, principle of competitive exclusion, the Kermack-McKendrick model of epidemics (and variants), Markov chain models (with the requisite intro to probability) and the stochastic pure birth process and epidemic models.
Offered: Spring

MTH 230  NUMBER THEORY WITH APPLICATIONS
Divisibility, primes, congruences, quadratic residues and quadratic reciprocity, primitive roots, and selected topics, with applications to cryptography and computer science.
Offered: Fall

MTH 233  INTRODUCTION TO CRYPTOGRAPHY
Private-key cryptosystems, from a historical introduction through DES and AES. Public-key systems, including RSA and Diffie-Hellman; primality testing and factorization. Digital signatures and security protocols.
Offered: Spring

MTH 235  LINEAR ALGEBRA
Finite-dimensional vector spaces over R and C axiomatically and with coordinate calculations. Forms, linear transformations, matrices, eigenspaces, inner products. This course uses the Tuesday/Thursday 08:00-09:30am Common Exam time.
Offered: Fall Spring

MTH 236  INTRODUCTION TO ALGEBRA I
Basic algebraic structures, including groups, rings, and fields with applications to specific examples.
Offered: Spring

MTH 236H  INTRODUCTION TO ALGEBRA I (HONORS)
Honors version of MTH 236.
Offered: Spring

MTH 237  INTRODUCTION TO ALGEBRA II
Continuation of MTH 236 covering field theory and Galois theory including proofs of the impossibility of trisecting angles, doubling the cube, squaring the circle, and solving 5th-degree polynomials”.
Offered: Fall

MTH 238  COMBINATORIAL MATH.
Permutations and combinations; enumeration through recursions and generating functions; Polya's theory of counting; finite geometrics and block designs; counting in graphs.
Offered: Spring
MTH 240 INTRODUCTION TO TOPOLOGY
Review of set theory; metric spaces and topological spaces; functions and continuous functions; convergence, completeness, connectedness, and compactness; applications to surfaces.
Offered: Spring

MTH 240H INTRODUCTION TO TOPOLOGY (HONORS)
Honors version of MTH 240.
Offered: Spring

MTH 246 LOGIC AND SET THEORY
Either mathematical logic (propositional calculus; the decision problem; consistency and completeness) or set theory (sets, relations, and mappings; cardinals and ordinals; axiom of choice and equivalents), depending on the year.
Offered: Fall

MTH 248 THEORY OF GRAPHS
Paths, circuits, trees; bipartite graphs, matching problems; unicursal graphs, Hamiltonian circuits, factors; independent paths and sets; matrix representations; planar graphs; coloring problems.
Offered: Spring

MTH 250 INTRODUCTION TO GEOMETRY
Foundations of geometry; isometry, similarity, inversions; introductions to affine, projective, and non-Euclidean geometries.
Offered: Spring

MTH 255 DIFFERENTIAL GEOMETRY
Torsion, curvature; curves and surfaces in 3-space.
Offered: Fall

MTH 263 ORDINARY DIFFERENTIAL EQUATIONS
Theoretical approach to ordinary differential equations and the qualitative behavior of their solutions.
Offered: Fall

MTH 265 FUNCTIONS OF A REAL VARIABLE I
Real number system, continuity and uniform continuity, mean value theorems, bounded variation, Riemann-Stieltjes integral, sequences of functions.
Offered: Fall

MTH 265H FUNCTIONS OF A REAL VARIABLE I (HONORS)
Honors version of MTH 265.
Offered: Fall

MTH 266 REAL ANALYSIS II
Continuation of MTH 265/265H. Possible topics: a rigorous exposition of Fourier analysis; multivariable analysis; elementary theory of Hilbert and Banach spaces.
Offered: Spring

MTH 280 INTRODUCTION TO NUMERICAL ANALYSIS
The numerical solution to mathematical problems by computer: linear systems, approximation, integration, and differential equations; floating point arithmetic and consequent pitfalls of computation.
Offered: Fall
MTH 281 INTRODUCTION TO FOURIER SERIES, ORTHOGONAL POLYNOMIALS, and BOUNDARY VALUE PROBLEMS
Fourier series and convergence theorems; orthogonal polynomials; applications to some partial differential equations; Fourier transforms.
Offered: Fall

MTH 282 INTRODUCTION TO COMPLEX VARIABLES WITH APPLICATIONS
Complex differentiation and integration, analytic functions, singularities, residues, poles, power series, conformal mapping, with some applications. This course is independent of MTH 281.
Offered: Spring

MTH 285 METHODS OF APPLIED MATHEMATICS
Topics emphasized can vary year-to-year. Typical topics covered are: Minimum principles; eigenvalues and dynamical systems; constraints and Lagrange multipliers; differential equations of equilibrium; calculus of variations; stability and chaos; nonlinear conservation laws.
Offered: Spring

MTH 287 MATH METHODS IN OPT & PHYSICS
This course introduces techniques in mathematical study of optical phenomena. Emphasis is places on gaining insight and experience in the use of these powerful and elegant tools for describing, solving and resolving optical systems and schema.
Offered: Spring

MTH 300W HISTORY OF MATHEMATICS I
The nature and style of mathematics in ancient Babylonia, Egypt, and Greece; medieval and Renaissance Europe; seventeenth-century Europe; and some aspects of the development of abstraction and rigor in analysis and set theory since 1700. This course is for seniors only and has a hard cap of 20 students. Students that need an upper-level writing course in mathematics should explore the alternatives of MTH 200W or MTH 391W. See the Math Department website for more information.
Offered: Spring

MTH 390 SUPERVISED COLLEGE TEACHING

MTH 391 INDEPENDENT STUDY
Independent Study in Mathematics. Special work arranged individually.

MTH 391W INDEPENDENT STUDY
Independent Study in Mathematics. Special work arranged individually.

MTH 393 SENIOR PROJECT

MTH 393W SENIOR PROJECT

MTH 394 INTERNSHIP

MTH 395 INDEPENDENT RESEARCH

MTH 395W INDEPENDENT RESEARCH

MTH 436 ALGEBRA I
Rings and modules, group theory, fields and Galois theory.
Offered: Fall

MTH 437 ALGEBRA II
Multilinear algebra, quadratic forms, simple and semi-simple rings and modules.
Offered: Spring

**MTH 440 GENERAL TOPOLOGY**
Continuity; compactness, connectedness, metrizability; product spaces.
Offered: Fall

**MTH 443 ALGEBRAIC TOPOLOGY**
The combinatorial structure of complexes and the homology of polyhedra; applications of algebraic techniques in topology to classification of surfaces, fixed point theory, and analysis.
Offered: Spring

**MTH 448 COMPUTATIONAL TOPOLOGY**

**MTH 453 DIFFERENTIABLE MANIFOLDS**
Differentiable manifolds, mappings and embeddings, exterior differential forms, affine connections, curvature and torsion. Riemannian geometry, introduction to Lie groups and Lie algebras.
Offered: Spring

**MTH 467 THEORY ANALYTIC FUNCTIONS**
Cauchy theorems, Taylor and Laurent series, residues, conformal mapping, analytic continuation, product theorems.
Offered: Spring

**MTH 471 REAL ANALYSIS**
Lebesgue measure on the line; measure spaces; integration; convergence theorems; Radon-Nikodym theorem; differentiation; Fubini's theorem; function spaces.
Offered: Fall

**MTH 472 FUNCTIONAL ANALYSIS**
Banach spaces; dual spaces; Riesz representation theorem; Hilbert spaces; Fourier series; projective and unitary operators; spectral analysis of completely continuous self-adjoint operators.
Offered: Fall

**MTH 491 MASTER'S READINGS IN MATH**

**MTH 492 SPECIAL PROJECTS**

**MTH 493 MASTER'S ESSAY**

**MTH 503 THEORY OF PROBABILITY**
Characteristic functions; the central limit theorem; infinitely divisible laws; random walk on groups.

**MTH 506 TOPICS IN ADV PROBABILITY**
Topics are related to recent research in the field.
Offered: Spring

**MTH 530 ELLIPTIC CURVES**

**MTH 535 COMMUTATIVE ALGEBRA**

**MTH 537 COMMUTATIVE ALGEBRA**
Projective and injective modules, complexes and resolutions, derived functors, including Ext and Tor, the homology and cohomology theory of groups and algebras, applications to the extension problem, etc.

**MTH 538** TOPICS IN ALG. GEOM.

**MTH 539** TOPICS IN ALGEBRAIC GEOM II

**MTH 549** TOPICS IN ALGEBRAIC TOPOLOGY
Introduction to research in algebraic topology; the course covers: cup products, fibrations, spectral sequences, and cohomology operations with particular attention to Eilenberg-MacLane spaces.

**MTH 557** TOPICS IN GEOMETRY

**MTH 565** TOPICS IN PARTIAL DIFFERENTIAL EQUATION
Linear partial differential operators with constant coefficients. Elementary solutions; elliptic, hypo-elliptic, and hyperbolic operators.

**MTH 568** TOPICS IN NUMBER THEORY
This course starts with the definitions and introductory theory of modular forms, presents an overview of some of the classic papers on the subject, and focuses on some of the recent advances. Particular topics chosen each year are left up to the individual instructor.

**MTH 569** ARITHMETIC EQUIDISTRIBUTION

**MTH 578** TOPICS IN HARMONIC ANALYSIS

**MTH 590** SUPERVISED COLLEGE TEACHING

**MTH 591** PHD READINGS IN MATH

**MTH 594** INTERNSHIP

**MTH 595** PHD RESEARCH IN MATH

**MTH 595A** PHD RESEARCH IN ABSENTIA

**MTH 597** SEMINAR

**MTH 895** CONT OF MASTER'S ENROLLMENT

**MTH 897** MASTER'S DISSERTATION

**MTH 899** MASTER'S DISSERTATION

**MTH 985** LEAVE OF ABSENCE

**MTH 986V** FULL TIME VISITING STUDENT

**MTH 990** SUMMER IN RESIDENCE

**MTH 995** CONT OF DOCTORAL ENROLLMENT

**MTH 997** DOCTORAL DISSERTATION
MTH 997A  DOCT DISSERTATN IN ABSENTIA

MTH 999  DOCTORAL DISSERTATION

MTH 999A  DOCT DISSERTATN IN ABSENTIA

MUR 100  EXPERIENCING MUSIC
A "music appreciation" course that celebrates the "ears-on" experience of various aspects of musical performance. Participants develop listening skills through live musical presentations, in-class performances, discussions with the performers and living composers, and guided listening sessions. Students will attend some rehearsals and concerts, including at least one Rochester Philharmonic concert at the Eastman Theatre.
Offered: Spring

MUR 101  ELEMENTS OF MUSIC
A course for the student with no previous musical experience. Topics covered include notation, intervals, chords, and other basic concepts of tonal harmony, with application to the study of a wide range of styles including popular idioms. Students should not be able to read music.
Offered: Fall Spring

MUR 104  CARILLON
Private carillon instruction, weekly 30-minute lessons or the equivalent. By audition only. Permission of instructor required. (2 credits)

MUR 106  A BRIEF HISTORY OF WESTERN MUSIC
This course is meant to be both a traditional class in music appreciation and a broad survey of Western notated music from its earliest manifestations up to the present day. Early lectures and assignments will help students develop more sophisticated listening skills and a conceptual vocabulary with which to talk about music. We will then focus on representative pieces from each major art-historical period (Medieval, Renaissance, Baroque, Classical, Romantic, Modern, Postmodern) as well as explore how that music functioned and held meaning for the people that composed and listened to it. Exams will test knowledge of repertory and musical style, and short writing assignments will venture into more detailed analyses and interpretations of musical works.

MUR 109  MUSICIANSHIP I: LITERACY SKILLS
Introduces students to basic musicianship skills. Begins with exercises in pitch matching and basic interval recognition and progresses toward other skills, such as singing simple melodies at sight, sight-reading various rhythmic patterns, and dictating simple melodies and chord progressions. Prospective music majors, especially those with prior singing experience, typically skip this course and begin with MUR 113.
Offered: Fall Spring

MUR 110  INTRODUCTION TO MUSIC THEORY
Basic concepts addressing students with previous experience in an instrument or voice and little music theory. Scales, keys, intervals, chords, basic part-writing, and other fundamental aspects of musical structure. Some ear training and aural skills.
Offered: Fall

MUR 111  THEORY I
The first in a four-course sequence. Deals with basic elements of harmony, voice-leading, and analysis. Part-writing in chorale style teaches elementary aspects of tonal theory. Prospective music majors should begin their theory requirement with this course. Prereq: MUR 101, 110 or permission of instructor (placement test).
Offered: Fall

MUR 112  THEORY II
Continuation of MUR 111. This course continues with chorale and keyboard-style harmony exercises, but also introduces chromaticism, modulation, and analysis of form and phrase structure. Prerequisite: MUR 111.
Offered: Spring

**MUR 113 MUSICIANSHIP II**
This course develops basic musicianship skills with an emphasis of diatonic sight-singing, rhythmic sight-reading, and dictation of diatonic melodies and chord progressions. The exercises and in-class activities are similar to MUR 109 but at a more advanced level. (1 credit)
Offered: Fall Spring

**MUR 114 MUSICIANSHIP III**
Continuation of MUR 113 with an increased emphasis on chromaticism, especially simple modulation and mode mixture. The course puts emphasis on ensemble singing and aural analysis. Prerequisites: MUR 113 or permission of theory coordinator. (1 credit)
Offered: Fall Spring

**MUR 115 MUSICIANSHIP IV**
Continuation of MUR 114 with greater emphasis on chromaticism and aural analysis. (1 credit) Prerequisite: MUR 114.
Offered: Fall Spring

**MUR 116 KEYBOARD SKILLS I**
Introduces students to the keyboard as a vehicle for broader musical development. Covers basic piano technique, sight-reading of simple chord progressions, realization of figured bass, and basic improvisation. No prior keyboard training required. Permission of instructor required. (2 credits)
Offered: Fall Spring

**MUR 117 KEYBOARD SKILLS II**
Continuation of MUR 116. Students completing this course fulfill the piano proficiency for the music major. Prerequisite: MUR 116 or permission of instructor. (2 credits)
Offered: Fall Spring

**MUR 118 BEGINNING PIANO: FOR NON-MUSIC MAJORS**
River Campus student elective course. No previous keyboard instruction and cannot read music. Includes technique, fundamental skills, and repertoire. *Note: limited seating due to keyboard availability, no additional students taken once the sessions are full. Classes are on ESM campus. (2 credits)
Offered: Fall

**MUR 119 BEGINNING PIANO: FOR NON-MUSIC MAJORS**
Continuation of MUR 118. (2 credits)
Offered: Spring

**MUR 120 SYMPHONY AND THE CONDUCTOR**
Glimpses into the world of standard performance and an overview of the métier of the orchestra conductor. In addition to the ability to read music, and knowledge of basic theory, the participants must have a love for and active interest in symphonic music.
Offered: Spring

**MUR 121 WORLD MUSICS**
Take a global journey in sound! A perfect opportunity for majors and non-majors alike, this course will broaden your musical horizons, introducing you to vibrant performance traditions from around the world. Through short reading assignments, listening examples, and film clips, we will explore how music fits into a variety of social, political, and religious contexts. Participatory
experiences, such as an instrument-making workshop, will also contribute to our understanding of relationships between people, sound, and place.

Offered: Fall

**MUR 122A HISTORY OF JAZZ**

This study of Jazz, as an American musical art form, will be structured around the lives and music of jazz musicians, across a range of instrumental, vocal, and ensemble genres. Course focuses on jazz titans, those individuals and musical groups distinguished by their seminal and permanent influences, such as Louis Armstrong, Miles Davis, or Coleman Hawkins or shorter intense careers, such as Charlie Parker. Blues, ragtime, swing, bebop, cool, progressive, and free jazz are landmark terms. And finally, study of the musical history will be enhanced by considerations from sociological, linguistic, and philosophical perspectives. The instructional format includes lectures, discussion and intense emphasis on listening. This course is designed for students with little or no musical training; simple technical, musical vocabulary and concepts will be provided. Reading, listening assignments, brief written assignments and two exams. No prerequisites. (Fall Only)

**MUR 122B HISTORY OF JAZZ II**

This course will focus on Jazz music and musicians in the latter half of the 20th century (ca. 1955-2000). We will investigate the relationship of Jazz to the following topics: new musical styles, other art forms, changes in American society, technological developments, and the evolution of recording, broadcast, and news media. In doing so, we will consider not only musicians who first emerged as leaders during this period (Ornette Coleman, John Coltrane, Bill Evans, Herbie Hancock, Keith Jarrett, Chick Corea, Wynton Marsalis, John Scofield), but also those whose careers began earlier (Louis Armstrong, Dizzy Gillespie, Miles Davis, Gil Evans) and continued into the 1950s and beyond. We will also examine how repertoire from previous historical periods came to be viewed by subsequent generations. The instructional format includes lectures and discussion along with in-class viewings/listenings of recorded performances. This course is designed for students with little to no musical training.

**MUR 123 MUSIC OF BLACK AMERICANS**

Study of Black American Christian musical beginnings, including forms of worship, early musical practices, the Spiritual, evolution of Gospel. An examination of ante-bellum musical activities follows including secular song types, character of the folk music with respect to poetic and musical form, language and themes. Attention will be given to significant literary and aesthetic developments, especially during the Harlem Renaissance and the poetry of several writers of that era will be surveyed. The course will treat Blues, its origins evolution through the 1940s. Surveys of classical music forms from the 18th to mid-20th century; music of the theater from minstrelsy to Broadway; precursors of jazz, the syncopated dance orchestra and brass bands; early jazz to bebop round out the course offerings.

Offered: Spring

**MUR 124 SIGNED SEALED & DELIVERED: Deals & Innovations that Changed the Music Industry Forever**

A look at the historical deals and innovations that have impacted the music business between 1877 to present. From ground breaking inventions to brilliant marketing initiatives to hushed back-room deals, this course will expose the key moments where the record industry changed forever, both for good and bad. **NOTE: This is a 6 week course**

Offered: Spring

**MUR 125 HISTORY OF ROCK MUSIC**

This course explores the history of rock music, emphasizing primarily the period between 1955-1990. Discussion and reading focusing on identifying a variety of rock-music styles within the historical context of the development, transformation, and interaction of pop styles. Issues of technological development, social, political, and cultural context, race and gender, and music-business practices will also be considered. No prerequisites for this course.

**MUR 126 OPERA**

A small number of representative operas will be used to highlight the history of this controversial 400-year old art form and its creators, performers, and audiences. Drama, music, staging, spectacle, and dance will be examined as components of production. Divas welcome. Prerequisite: ability to read music.

Offered: Fall

**MUR 127 THE BLUES**
The origins of the Blues in the context of African-American culture in the late 19th and early 20th centuries, its rapid rise to becoming the dominant popular music in the African-American community, and the discovery of blues by white audiences.

**MUR 129 THE ROLLING STONES and BRITISH BLUES-ROCK**
The music of the Rolling Stones is examined, starting with the earliest music from 1962 and extending to the early 1970s. Emphasis will be on the band's stylistic development, as well as on the British blues movement of the early to mid 1960s. The music of other blues-based British groups, including Blues Incorporated, the Yardbirds, the Animals, the Bluesbreakers, Cream, and Led Zeppelin, will also be considered. No previous training or ability to read music is required.

**MUR 130 THE BEATLES, BRITISH INVASION, PSYCHEDELIA**
The history of the Beatles career and music is explored in the context of the band’s stylistic development, as well as against the backdrop of social, cultural, technical, and music-business events and issues of the 1950s, 60s and 70s. No background in music theory or ability to play a musical instrument is required.

Offered: Spring

**MUR 132 STARMAKERS: INSIDE THE PUBLICITY MACHINE**
Will include a historical overview of music stars and the publicity campaigns used to promote their careers. From Frank Sinatra-1940s; through Elvis Presley-1950s; through The Beatles & The Rolling Stones in the 1960s, up through self-indulgent 70s with acts like Elton John, Kiss, and Prince, up to today's high profile campaigns for Justin Bieber, Rihanna and Lady Gaga. Students will be versed in the art of writing an artist bio, press releases, and in the various types of PR events staged to gain publicity. Starmakers will also look at the various types of publicity such as career launching; crisis management(scandals; sudden death of celebrity)and tour press. We will also look at how social media has become a game changer for music publicity.

**MUR 133 MUSICAL THEATER WORKSHOP**
Intensive practical experience with scene-and-song work in the repertory of popular musical theater genres. Weekly rehearsals and critique sessions, with emphasis on characterization, technical skills, sub-textual dimensions, and stylistic considerations. Some reading assignments, but emphasis is on performance preparation. Initial and concluding videotaping of “audition piece.”
Prerequisite: One year of voice instruction; permission of instructor (by audition).
Offered: Spring

**MUR 134 STYLES & GENRES: INTRODUCTION TO MUSIC HISTORY**
An introduction to the history of Western classical music from the Middle Ages to the present, with emphasis on recognition of the chief stylistic characteristics and understanding of major genres of each period. Prerequisite: MUR 112 or permission of instructor.

**MUR 135B SONDHEIM AND THE MODERN MUSICAL THEATER**
A historical and critical survey of the American musical theater from roughly 1960 to the present, as reflected principally in the works of composer/lyricist Stephen Sondheim and/or producer/director Harold Prince. Analysis of lyrics, musical forms and idioms, process of adaptation and production, modes of performance. Although prior completion of MUR 135A is recommended, students with a strong background in musical theater will be admitted as well. (Fall, alternate years)

**MUR 137 THINKING ABOUT MUSIC**
Everyone knows that music can elicit a wide variety of emotions. But whether classical or jazz, punk, rock, or gospel, music also communicates countless other meanings, denoting aspects of race, religion, gender, culture, and politics. This course will explore various ways of thinking about musical meaning. After first building a musical vocabulary, we will discuss many kinds of music in different contexts, including classical and popular music, Broadway and opera, film scores, music videos, advertisements, and religious and nonwestern traditions.
Offered: Spring

**MUR 140 RELIGION & HIP HOP CULTURE**
This course considers an often overlooked element in the study of hip hop culture, religion. Specifically, the course offers students the opportunity to examine the variety of ways that religion finds expression in the dynamic cultural medium of hip hop. Class format includes lectures, discussions, films, and video/music presentations.
MUR 141 INTRO TO AUDIO MUSIC & ENGIN

MUR 143 GLOBAL POP

MUR 145 HIGH VOLTAGE: HEAVY METAL MUSIC AND ITS HISTORY
Behind the screaming guitars, thundering pulse, and soaring vocals of heavy metal music lies an impressive history of censorship, rebellion, and redemption. Emphasis on musical structure and the fascinating social/cultural history of hard rock and metal. Over 40 years of hard rock and metal trends will be discussed—Sabbath to Stryper to Slipknot—and several guest musicians and lecturers will complement the course materials with performances and anecdotes.

MUR 147 CONCEPT ALBUMS: ART OF POP
This course explores how and why pop musicians create concept albums: full-length studio albums organized around a single compositional or narrative theme. Examples include Quadrophenia (1973) by The Who, The Wall (1979) by Pink Floyd, American Idiot (2004) by Green Day, and the seven-part Metropolis series (2007-present) by Janelle Monáe. In addition to developing a broad perspective of the concept album’s significance within popular music history, students will analyze one concept album of their choice and will share findings via a class presentation and final paper. Prerequisites: MUR 110 or 111, or permission of instructor.

MUR 150 WOMEN’S CHORUS
The Women’s Chorus is a choral ensemble of female students from across the university who perform a wide variety of music in concerts throughout the semester. Participants will have the opportunity to develop healthy vocal production and musicianship skills. To join, simply register for the class. Auditions will be arranged during the first week of classes.
Offered: Fall Spring

MUR 151 MENS GLEE CLUB
The Men's Glee Club continues the century-old tradition of singing at the UR. Students, faculty, staff and community members perform a wide repertoire of music. The men's and women's glee clubs regularly combine with various instrumental groups to perform large oratorio style works. Auditions will be held during the first class.
Offered: Fall Spring

MUR 152 UNIVERSITY CHAMBER SINGERS
Chamber Singers is a select 28-to 32-member ensemble which performs a cappella and chamber music from the 14th to the 21st centuries. The group is as comfortable singing jazz as performing Renaissance motets. All members of the undergraduate and graduate student body are welcome to audition for the ensemble. Auditions are held every semester. --Auditing not permitted
Offered: Fall Spring

MUR 153 SYMPHONY ORCHESTRA
URSO (Symphony Orchestra) is a university-civic orchestra whose members are selected from both UR student body and greater Rochester community. Membership through auditions, occurs prior to the first rehearsal of each season. Other auditions may be held as needed throughout the season.
Offered: Fall Spring

MUR 154 CHAMBER ORCHESTRA
URCO (Chamber Orchestra) Membership is limited and is granted by the music director through competitive auditions, which occur prior to the first scheduled rehearsal of each season. Auditions may be held as needed during the academic year.
Offered: Fall Spring

MUR 155 CHAMBER ENSEMBLES
The chamber music program facilitates formation and coaching of serious advanced chamber ensembles. One academic credit may be earned by registering and successfully completing all requirements listed under course work. Admission by permission of the coordinator.
Offered: Fall Spring
MUR 156 WIND SYMPHONY
Wind Symphony draws its membership primarily from the student body on River Campus and performs music of various styles, genres, and eras. Membership by audition. Coursework: One rehearsal per week; individual practice. At least four concerts per academic year. Attendance required at all rehearsals, dress rehearsals, and concerts, unless excused in advance by conductor.
Offered: Fall Spring

MUR 157 JAZZ ENSEMBLE
The Jazz Ensemble is open by audition to all U of R community, and performing a wide variety of music. Occasional guest artists and clinicians. (Fall and Spring) (1 credit)
Offered: Fall Spring

MUR 157A JAZZ COMBO
Small group playing of selections from the jazz repertoire, with an emphasis on improvisation. Admission is by permission of instructor only. (1 credit)
Offered: Fall Spring

MUR 158 GOSPEL CHOIR
One rehearsal per week. Two concerts per semester. In addition, there may be off-campus performances in local colleges, churches, and other venues in the greater-Rochester community. The Gospel Choir performs a varied repertoire of sacred music -- spirituals, hymns, traditional and contemporary Gospel, music of the praise-and-worship genre. (Fall and Spring) (1 credit)
Offered: Fall Spring

MUR 159 GAMELAN ENSEMBLE
The Eastman Gamelan performs traditional ceremonial music and new-style music (keybar) from Bali and also new compositions for Gamelan. (Fall and Spring) (1 credit)
Offered: Fall Spring

MUR 161 BROADCASTING IN THE DIGITAL AGE
A descriptive and critical analysis of the nature of electronic mass media, broadcast practices and impact. Designed to provide a broad, rigorous orientation for understanding basic elements of media production as well as skills training in reporting, writing, editing, delivery and production of broadcast media.
Offered: Spring

MUR 162 MUSIC & THE MIND
Introduction to the discipline of music cognition. Topics include empirical methods, psycho-acoustic principles, influence of Gestalt psychology, music and language, metric and tonal hierarchies, music and the brain, aspects of musical development, and research on musical memory, expectation, and emotion.
Offered: Spring

MUR 163 GOSPEL PERFORMANCE WORKSHOP
One rehearsal per week. Two concerts per semester. In addition, there may be off-campus performances in local colleges, churches, and other venues in the greater-Rochester community. This workshop ensemble performs a varied repertoire of sacred music -- spirituals, hymns, traditional and contemporary Gospel, music of the praise-and-worship genre. (1 credit)

MUR 165 MBIRA ENSEMBLE
The Eastman Mbira Ensemble provides a hands-on introduction to the ancient and sophisticated musical tradition of the Shona mbira of Zimbabwe. Visiting Zimbabwean guest artists will also offer students the opportunity to delve more deeply into traditional musical practices and their cultural and spiritual context. Songs are taught aurally so no musical experience or training is required.
Offered: Fall Spring
**MUR 168** WEST AFRICAN DRUMMING Intro

Ensemble dedicated to dynamic percussive traditions of Guinea, combining the iconic djembe hand drum with a trio of drums played with sticks, known as dunun, sangban, and kenkeni. The powerful, multi-part relationships established by this trio of drums provide a rhythmic foundation, enabling djembe players to develop technique in executing accompaniment and solo parts. Fana engages ensemble players with a wide repertory of music from various regions of Guinea, including the rhythms of the Susu, Malinke, and Baga language groups. Intro and Advanced sessions offered each semester.

Offered: Fall Spring

**MUR 168A** WEST AFRICAN DRUMMING INTRO

Led by Master Drummer Fana Bangoura, the West African Drumming Ensemble is dedicated to the dynamic percussive traditions of Guinea. The ensemble combines the iconic djembe hand drum with a trio of drums played with sticks, known as dunun, sangban, and kenkeni. The powerful, multi-part relationships established by this trio of drums provide a rhythmic foundation for the ensemble, enabling djembe players to develop technique in executing both accompaniment and solo parts. Drawing upon his experience as a soloist with the internationally acclaimed groups Les Percussions de Guinée and Les Ballets Africains, Fana engages ensemble players with a wide repertory of music from various regions of Guinea, including the rhythms of the Susu, Malinke, and Baga language groups.

**MUR 168B** WEST AFRICAN DRUMMING ADV

In this course, students will work on expanding their repertory of rhythms from Guinea, West Africa, and on improving their playing technique on the djembe, dunun, sangban, and kenkeni. In particular, we will concentrate on learning extended solo sequences for the djembe, and more advanced arrangements played on the dunun, sangban, and kenkeni. Students will also work on developing skills specific to performance, adding choreographed onstage movement to complement their drumming.

**MUR 170** BRASS CHOIR

Brass Choir is a 35-45 member ensemble dedicated to performing quality brass music at a high level while fostering a spirit of community among brass players on the RC. Open to experienced trumpet, horn, trombone, euphonium, and tuba players.

Offered: Fall Spring

**MUR 175** PERCUSSION ENSEMBLE

A serious contemporary ensemble that performs works from the standard percussion ensemble repertoire, occasionally the less standard, and brand new compositions for this genre. Some of the composers whose repertoire we have performed in the past consist of Hollinden, Rouse, Beck, Cowell, Peck, Cage, and Andriessen. Prior experience in percussion, the ability to read music and an audition are required.

Offered: Fall Spring

**MUR 180** ROCK REPERTORY ENSEMBLE

The Rock Repertory Ensemble is devoted to performing accurate versions of songs from the rock music repertory, with selections ranging from the early 1950s to the present day. Open to guitarists, bassists, drummers, keyboard players, and singers, with consideration given to winds players depending on repertory for a given semester. Audition required.

Offered: Fall Spring

**MUR 181** GTR CLASS: BEYOND THE BASICS

This is an introductory guitar class that will teach guitar fundamentals and get students playing popular, rock, blues, classical, and simple jazz tunes by the end of the semester. This course is open to all guitar enthusiasts as well as music majors/minors seeking a ‘methods class’ approach to learning the instrument. Electric and acoustic guitars welcome. Contact Professor Bob Sneider bsneider@esm.rochester.edu with any questions. TA led organized practice sessions TBA

**MUR 183** INTRO TO CLASSICAL GUITAR

Intro to Classical Guitar: Intro to Classical Guitar will introduce students to rudiments of classical guitar technique, including tuning, basic posture and position, chord formation, note reading, and introduction to repertoire. Basic ensemble techniques will be incorporated into class sessions. By the end of the semester, students will be able to: - Individually perform beginning classical guitar repertoire - Accompany songs with arpeggiated technique - Sight-read assigned music selections, using standard music notation
MUR 191 ART AND TECH OF RECORDING
This course covers the acoustical and psychoacoustic fundamentals of audio recording including the nature of sound, sound pressure level, frequency and pitch, hearing and sound perception, reflection, absorption and diffusion of sound, sound diffraction, room acoustics, reverberation, and studio design principles. The course also provides practical experience in audio recording including an introduction to recording studio equipment, microphones and microphone placement techniques, signal flow, amplification, analog and digital recording, analog to digital conversion, digital processing of sound, multi-track recording and an introduction to mixing and mastering. Each student is required to complete a substantive recording project at the end of the course. (AME 191)

MUR 192 LISTENING AND AUDIO PROD
This course is a continuation of AME191. Emphasis is on the development of critical listening skills and proficiency in audio mixing and mastering. Fundamental topics covered include the human auditory system, theories of hearing and audio perception, perception of loudness and pitch, critical bands and auditory masking, beats and roughness, temporal and pitch acuity, binaural hearing. Listening skills development include hearing “width” and “depth” in audio, mixing techniques in various musical genres, recognition of various effects including reverb, delay, compression, phasing and distortion. Production skills development includes equalization and achieving spectral balance, the use of compression and dynamic range control, achieving depth and dimension in recordings, panning and auditory scene control.

MUR 193 SOUND DESIGN
The course is intended to provide students a basic understanding of sound design, audio recording, and working with sound for picture. The emphasis is on demonstrations and hands-on experience to enable students to gain a practical knowledge of sound and music production using computers. Fundamental topics include synthesizers & samplers; recording and editing with Pro Tools; sound effect creation; field recording; foley & ADR; basic soundtrack composition; and working to picture. Many techniques are explored using hardware, software, and state of the art workstations throughout the course. Students will complete a major sound for picture project at the conclusion of the course. (AME 193)

MUR 201 BASIC JAZZ THEORY & IMPROVISATION I
Rudiments of jazz, including chord and scale spellings, chord scale relationships, jazz/pop chord symbol nomenclature, basic forms, chord substitutions, piano voicing; strong emphasis on ear training and vocalization and transcription from records of jazz solos.
Offered: Fall

MUR 202 JAZZ THEORY & IMPROVISATION II
Continuation of MUR 201.
Offered: Spring

MUR 203 SBA & HER WORLD
See online course description for WST 201.

MUR 204 CARILLON
Private carillon instruction, weekly 60-minute lessons. By audition only. Permission of instructor required. (4 credits)

Throughout much of Southern Africa, the word “ngoma” means drum. It also refers to specific musical styles that combine drumming, dance, and song. Finally, there is often a ritual dimension to ngoma, which is used in ceremonies focused around individual and social healing. In this class, students will bring ngoma alive by learning to perform various Zimbabwean ngoma genres, with the option of specializing in either drumming or dance. Through video clips, audio recordings, photos, and articles, we will also learn to understand ngoma within a larger cultural framework.

MUR 211 THEORY III
Continuation of MUR 112. Focuses on analysis of large forms, such as sonata, rondo, and song forms. Includes advanced study of chromatic harmony and modulation to remote keys. Prerequisite: MUR 112.
Offered: Fall
MUR 212 THEORY IV
Continuation of MUR 211. Explores the theoretical and aesthetic principles of twentieth-century music, especially in relation to earlier compositional procedures. Introduces basic post-tonal theory, including set-class analysis, transformational theory, and serial techniques. Prerequisite: MUR 211.
Offered: Spring

MUR 221 HISTORY OF WESTERN MUSIC TO 1600
Survey of Western classical music through 1600, including the investigation of style, genre, transmission, contemporary theory, patronage, cultural context and meaning, etc. Workshops deal with topics such as transcription and performance practice.
Prerequisite: Completion of or current enrollment in MUR 111. For sophomores and above.
Offered: Fall

MUR 222 HISTORY OF WESTERN MUSIC 1600-1750
Survey of Western classical music from ca. 1600 to the mid-eighteenth century, with emphasis on the stylistic, generic, and performance innovations of the period; opera receives special attention. Workshops investigate specific problems posed by notation, performance, ethics, and so on.
Offered: Spring

MUR 223 HISTORY OF WESTERN MUSIC 1750-1850
The history of western art music from approximately 1730-1850, with an emphasis on analysis of the masterpieces of tonal music and their relationship to society and other arts. Lectures with extensive listening, reading, and analysis.
Offered: Fall

MUR 224 HISTORY OF WESTERN MUSIC: 1850-PRESENT
History of western art music from approximately 1850 through the present, with emphasis on the changing meaning of "New Music" and its role in society. Analysis of post-Wagnerian tonal music and non-tonal alternatives. Lectures, with extensive listening and reading, as well as analytical assignments.
Offered: Spring

MUR 229 NARRATIVES OF SLAVERY

MUR 233 ADVANCED MUSICAL THEATER WORKSHOP
Continuation of MUR 133.
Offered: Spring

MUR 236 MUSIC, ETHNOGRAPHY, and HIV/AIDS
Addressing the devastating effects of HIV/AIDS in the United States, United Kingdom, Tanzania, Zimbabwe, Uganda, Haiti, and elsewhere, this uniquely interdisciplinary course will incorporate insights from the fields of public health, medical anthropology, and ethnomusicology. Studying the HIV/AIDS epidemic through the lens of musical expression, we will ask how individuals and communities affected by HIV/AIDS have mobilized musical sound in response to the disease. Topics addressed within the class will include musical representations of HIV/AIDS within queer communities; the use of music in public health campaigns to raise awareness about the disease; and the mobilization of musical performance within grassroots support groups for individuals affected by HIV/AIDS.
Offered: Spring

MUR 391 INDEPENDENT STUDY
Offered: Fall Spring

MUR 393 SENIOR PROJECT
Offered: Fall Spring

MUR 394 INTERNSHIP
Offered: Fall Spring

**MUR 395 INDEPENDENT RESEARCH**

**MUR 396 BASIC JAZZ THEORY & IMPROV**
See course description for MUR 201.

**MUR 410 NGOMA:DRUM-DANCE&RIT S AFR**

**MUR 425 SEMINAR IN ROCK MUSIC**
Devoted to specialized topics in Rock Music

**MUR 436 MUSIC, ETHNOGRAPHY, and HIV/AIDS**
Addressing the devastating effects of HIV/AIDS in the United States, United Kingdom, Tanzania, Zimbabwe, Uganda, Haiti, and elsewhere, this uniquely interdisciplinary course will incorporate insights from the fields of public health, medical anthropology, and ethnomusicology. Studying the HIV/AIDS epidemic through the lens of musical expression, we will ask how individuals and communities affected by HIV/AIDS have mobilized musical sound in response to the disease. Topics addressed within the class will include musical representations of HIV/AIDS within queer communities; the use of music in public health campaigns to raise awareness about the disease; and the mobilization of musical performance within grassroots support groups for individuals affected by HIV/AIDS.
Offered: Spring

**MUR 468 WEST AFRICAN DRUMMING INTRO**
See course description for MUR 168A.

**MUR 591 PHD READINGS IN MUSIC**
Offered: Fall Spring

**MUR 986V FULL TIME VISITING STUDENT**

**NAV 093 INTRODUCTION TO NAVAL SCIENCE**
Organization, administration, customs, careers, warfare platforms and basic leadership fundamentals as well as joint warfare and national military strategy. Current world events are discussed as applicable.
Offered: Fall

**NAV 094 SHIP SYSTEMS I**
Detailed study of ship characteristics and types including ship design, hydrodynamic forces, stability, compartmentation, propulsion, electrical and auxiliary systems, interior communications, ship control, and damage control. Included are basic concepts and theory and design of steam, gas turbine, diesel and nuclear propulsion.
Offered: Fall

**NAV 098 NAVIGATION I**
International and United States inland rules of the nautical road, relative motion, Vector-Analysis Theory, formation tactics and ship employment. Introduction to naval operations and operations analysis, ship behavior and characteristics in maneuvering, applied aspects of ship handling, and afloat communications
Offered: Spring

**NAV 099 AMPHIBIOUS OPERATIONS**
Organization, techniques and strategies employed by the U.S. Navy and Marine Corps in the conduct of amphibious operations. Track the evolution of amphibious warfare from antiquity through the 20th century and become familiar with amphibious ships, landing craft and vehicles as they are used by today’s military.
NAV 222 NAVAL OPERATIONS & SEAMANSHIP
Further develop knowledge and practical skills learned in Navigation I (NAV 098). Introduction to Naval Operations at sea covering topics in four broad sections including: 1) Advanced Navigation; charts, maneuvering board, formation sailing, nautical rules of the road and international laws of the seas; 2) Communications security, radio procedures, tactical communications and maneuvering; 3) Evolutions Operations shipboard watch-standing, ship-handling evolutions; 4) Naval Doctrine and Joint/Combined Operations. Prepares midshipmen for a first tour in the active surface ship fleet.
Offered: Fall

NAV 249 SHIPS SYSTEMS II
Investigate theories and implementation of Naval weapons systems. Explore fundamentals of target detection (using RADAR and SONAR), warhead and fuse design, guidance and control principles, propulsion and launching, fire control, and mine warfare. Case studies are utilized during the course to aid the student in understanding the concepts of Command, Control, and Communication and as a starting point for discussions on leadership and ethics. Current world events and historical issues are discussed as applicable.
Offered: Spring

NAV 250 SEAPOWER MARITIME AFFAIRS
U.S. naval history from the American Revolution to the present with emphasis on major developments. Geopolitical theory of Mahan, applied to the current maritime strategies of the United States. Instruction will include lecture, discussion and films. Two texts will be used in conjunction with handouts.
Offered: Spring

NAV 251 EVOLUTION OF WARFARE
Basic understanding of the art and concept of warfare from the beginning of recorded history to the present day as well as the threads of continuity and the interrelations of political, strategic, operational, tactical and technical levels of war from the past. Applying the same principles and concepts to the battlefields of today and the future.
Offered: Spring

NAV 256 LEADERSHIP & MANAGEMENT II
Fundamental theoretical concepts of leadership management. Develop practical leadership tools that can be derived from the theoretical concepts.
Offered: Fall Spring

NAV 266 LEADERSHIP & ETHICS
Explore the moral, ethical, and legal issues facing leaders in industry, society, and the military while reinforcing the key underlying principles of leadership. Case studies are used in a seminar format to underscore the issues. The overall objective of this course is to develop critical thinking and reasoning skills in leadership situations, particularly those that pose a moral or ethical dilemma to the individual.
Offered: Spring

NAV 391 INDEPENDENT STUDY

NSC 201 BASIC NEUROBIOLOGY
Explores fundamental concepts of neural organization and function. Covers gross and cellular neuroanatomy, neuronal cell biology, the electrophysiology of neurons and synapses, neurochemistry, spinal circuitry, sensory and motor systems, and higher functions including learning and memory. Neuroscience majors must also register for a lab section - contact ughcoord@bcs.rochester.edu prior to registration to get a section assignment.
Offered: Fall

NSC 201P BASIC NEUROBIOLOGY LAB
This laboratory is for Neuroscience majors ONLY. Due to time conflicts, students should not take NSC 201P/BCS 240P and STT 212 in the same semester. Contact the Undergraduate Coordinator at ughcoord@bcs.rochester.edu if you have scheduling issues.
Offered: Fall

**NSC 203 LAB IN NEUROBIOLOGY**
Introduces the various methods used in neurobiological research. Covers anatomical, behavioral, molecular, and physiological approaches to studying neural organization and function and concludes with a research project that extends over a period of five weeks. STUDENTS MUST REGISTER FOR A WORKSHOP WHEN REGISTERING FOR THE MAIN SECTION.
Offered: Spring

**NSC 242 NEUROPSYCHOLOGY**
Examines clinical neuropsychology, which bridges neurology, neuroscience, and clinical psychology. Covers history of clinical neuropsychology, principles of neuropsychological assessment, and the interpretation of cognition and behavior as they relate to brain dysfunction. Considers specific neurological syndromes including neurodegenerative, cerebrovascular, toxic, and memory disorders; epilepsy; head trauma; toxic disorders; infectious processes; pediatric neuropsychology; psychiatric syndromes; and forensic neuropsychology. Patient presentations (videotape and in-person interviews) supplement lectures.
Offered: Fall

**NSC 243 NEUROCHEMICAL FOUNDATIONS OF BEHAVIOR**
Introduces the field of neurochemistry with an emphasis on cellular and molecular neurochemistry. Topics range from study of neurochemical mechanisms that underlie normal neural function to discussion of behavioral disturbances that result from neurochemical abnormalities. Considers neurochemical mechanisms of adaptive behavior, learning and memory, behavioral disorders, gender differences, and drug seeking behavior.
Offered: Fall

**NSC 244 NEUROETHOLOGY**
Explores the neural basis of naturally occurring animal behaviors. Emphasizes how information is integrated from interactions between molecules, cells, and groups of cells, all of which are necessary to produce behavior. Considers how hormones, neural development, anatomy, physiology, and evolution lead to behaviors such as orientation, communication, feeding, and reproduction.
Offered: Spring

**NSC 245 SENSORY & MOTOR NEUROSCIENCE**
Focuses on how single neurons and populations of neurons represent sensory information, how sensory signals are transformed and decoded to mediate perception, and how perceptual signals are converted into neural commands to initiate actions. Explores how simple behaviors (such as detection and discrimination) can be quantified and explained in terms of neural activity. Introduces students to quantitative approaches for linking neural activity to perception and decision-making. Emphasizes studies of the visual, oculomotor, and somatosensory systems, with some attention to the auditory and vestibular systems as well.
Offered: Spring

**NSC 246 BIOLOGY OF MENTAL DISORDERS**
Examines the neurobiology of anxiety/phobic conditions, mood disorders, and chronic psychotic states, particularly schizophrenia. Considers definitions of psychiatric syndromes, the problems of diagnosis, brain organization, and neurotransmitter systems involved in state functions. Introduces research approaches including epidemiologic, phenomenologic, family/adoption, longitudinal descriptive, psychophysologic, neuropharmacologic, genetic linkage, and postmortem studies; emphasizes recent in vivo brain imaging and neureceptor studies.
Offered: Spring

**NSC 247 TOPICS IN COMPUTATIONAL NEUROSCIENCE**
This course will provide an introduction to computational neuroscience, the study of both the computations performed by the brain, and of computational models of neuronal responses. In the course we will focus on the visual system.
Offered: Spring

**NSC 248 NEUROBIOLOGY OF LEARNING & MEMORY**
Provides a basic overview of the neural basis of learning and memory formation, with a focus on the acquisition of simple associations and complex memories and skills. Considers how neurons and neuronal ensembles encode, consolidate, store and retrieve specific memories. Although emphasis is on the anatomical, molecular and cellular levels, findings obtained from the perspective of systems and cognitive neuroscience are also considered.

Offered: Fall

**NSC 249 DEVELOPMENTAL NEUROBIOLOGY**
Advanced treatment of the development of the nervous system, including the nature/nurture issue and factors that influence the development of neural organization and function. Topics include the production, migration, differentiation and survival of neurons; functional specialization of neural regions; axonal navigation; target mapping. Compares and contrasts developmental plasticity with forms of neural plasticity exhibited in adults.

Offered: Spring

**NSC 301 SENIOR SEMINAR IN NEUROSCIENCE**
To be taken for one semester in the senior year (2 credits). Format can vary from an emphasis on exploring neuroscience as a scientific career to more thematically-based seminars dealing with recent research in neuroscience. Oral and written presentation skills are sharpened through a series of student-led presentations on current issues or topics in neuroscience, as well as a series of short reports.

Offered: Fall

**NSC 302 SEMINAR IN NEUROSCIENCE**
To be taken for one semester in the senior year (2 credits). Format can vary from an emphasis on exploring neuroscience as a scientific career to more thematically-based seminars dealing with recent research in neuroscience. Oral and written presentation skills are sharpened through a series of student-led presentations on current issues or topics in neuroscience, as well as a series of short reports.

Offered: Spring

**NSC 390 TEACHING INTERNSHIP IN NSC**

**NSC 391 INDEPENDENT STUDY**

**NSC 391W INDEPENDENT STUDY**

**NSC 394 INTERNSHIP**

**NSC 395 RESEARCH IN NEUROSCIENCE**

**NSC 396 SPECIAL TOPICS IN NEUROSCIENCE**

**NSC 547 INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE**

**OPT 000 OPTICS SEMINAR**

**OPT 101 INTRODUCTION TO OPTICS**
A discussion of the properties of light: refraction, imaging, diffraction, interference, the development of the microscope, telescope, laser, the Internet, information storage and display, and medical applications. Demonstrations. The EAS10X seminar/workshop is required for all students taking an EAS10X course for credit. Seminars discuss engineering and applied sciences in the real world, and provide overviews of Optics, Computer Science, Mechanical Engineering, Biomedical Engineering, Electrical and Computer Engineering, Audio and Music Engineering, and Chemical Engineering.

Offered: Fall

**OPT 197 GEOMETRICAL OPTICS LAB**
Students examine, analyze, measure, dismantle and reverse-engineer a variety of new and used optical tools, apparatus and systems. Emphasis on conceptual understanding and intuitive problem-solving.

Offered: Fall

**OPT 198 PHYSICAL OPTICS LAB**
This lab complements OPT 261. Experiments cover interference and diffraction phenomena, introduction to optical information processing and electronic imaging systems with emphasis on error analysis.

Offered: Spring

**OPT 199 INSTRUMENTATION LAB**
This laboratory complements OPT 242. Students experience further optical phenomena in the lab setting to better understand equipment that provides measurement and key optical data.

Offered: Fall

**OPT 201 GEOMETRICAL OPTICS LAB**
Students examine, analyze, measure, dismantle and reverse-engineer a variety of new and used optical tools, apparatus and systems. Emphasis on conceptual understanding and intuitive problem-solving.

**OPT 202 PHYSICAL OPTICS LAB LECTURE**
This lab complements OPT 261. Experiments cover interference and diffraction phenomena, introduction to optical information processing and electronic imaging systems with emphasis on error analysis.

**OPT 203 INSTRUMENTATION LAB LECTURE**
This laboratory complements OPT 242. Students experience further optical phenomena in the lab setting to better understand equipment that provides measurement and key optical data.

**OPT 204 SOURCES/DETECTORS LAB LECT**
This lab complements OPT 225 and provides the basic concepts required for understanding the operation of optical sources and photodetectors. It covers important sources such as lasers and light-emitting diodes as well several types of photodetectors.

**OPT 223 QUANTUM THEORY**
Intro to quantum mechanics in the context of modern optics and optical technology. Wave mechanics as applied to electrons in crystals and in quantum wells and the optical properties of materials. Semiconductor junctions in photodetectors and photoemitters.

Offered: Fall

**OPT 224 FUNDAMENTALS OF LASERS**
Fundamentals and applications of laser systems, including optical amplification, cavity design, beam propagation and modulation.

Offered: Fall

**OPT 225 SOURCES AND DETECTORS**
This course provides the basic concepts required for understanding radiometry and the operation of optical sources and photodetectors. It covers important sources such as lasers and light-emitting diodes as well several types of photodetectors.

**OPT 226 OPTOELECTRONICS I: DEVICES**
Light propagation in restricted geometries including waveguides and optical fibers. Dispersion and loss in linear and nonlinear pulse propagation. Coupling between passive and between active and passive elements.

Offered: Fall

**OPT 232 OPTO-MECHANICS**
System performance of glass with metal or plastic, kinematic design, material limitations. Applications to optical metrology, alignment, geometry 2D and 3D. This course is an OPT elective.
Offered: Spring

**OPT 241 GEOMETRICAL OPTICS**
Optical instruments and their uses. First-order Gaussian optics and thin-lens system layout. Photometric theory applied to optical systems. The eye, magnifier, microscope, matrix optics, nature of Seidel aberrations.
Offered: Fall

**OPT 242 ABERRATIONS, INTERFEROMETERS, AND OPTICAL TESTING**

**OPT 243 OPTICAL FABRICATION & TESTING**
Fabrication of a plane parallel plate, lens, or prism from a variety of optical glasses: controlled loose abrasive grinding pitch polishing skills; optical metrology, including interferometry and evaluation of roughness.
Offered: Spring

**OPT 244 LENS DESIGN**
3rd order aberration theory, optimization theory, global optimization, variables and constraints of various lens materials and types. Course concludes with individual lens design projects.

**OPT 245 PRECISION INSTRUMENT DESIGN**
This course focuses teaching the multidisciplinary aspects of designing complex, precise systems. In these systems, aspects from mechanics, optics, electronics, design for manufacturing/assembly, and metrology/qualification must all be considered to design, build, and demonstrate a successful precision system. The goal of this class is to develop a fundamental understanding of multidisciplinary design for designing the next generation of advanced instrumentation. This course is open to graduate students in engineering and physics backgrounds although it has a strong emphasis on mechanical engineering and systems engineering topics. This course is open to undergraduates who are in their senior year.

**OPT 246 OPTICAL COATING TECHNOLOGY**
Optical interference in a multilayer stack and its application to anti-reflection coatings, beamsplitters, laser mirrors, polarizers, and bandpass filters.
Offered: Fall

**OPT 247 ADVANCED THIN FILM COATINGS**
Specialty and custom coatings and their scientific applications and business uses.
Offered: Spring

**OPT 248 VISION AND THE EYE**
How the human eye's optical and neural factors process color and spatial information includes comparison with the design and capabilities of other animals' eyes.
Offered: Spring

**OPT 253 QUANTUM & NANO OPT LAB**
This laboratory course (3 hours per week) exposes students to cutting-edge photon counting instrumentation and methods with applications ranging from quantum information to nanotechnology, biotechnology and medicine. Major topics include quantum entanglement and Bell’s inequalities, single-photon interference, single-emitter confocal fluorescence microscopy and spectroscopy, photonic bandgap materials, Hanbury Brown and Twiss interferometer, and photon antibunching. Each lab also includes lecture and discussions of lab materials.
Offered: Fall
OPT 254 NANOMETROLOGY LABORATORY
This is a required, 4-credit-hour course for the Certificate in Nanoengineering Program. It consists of three laboratory experimental modules accompanied by lecture materials: Module 1. Scanning electron microscopy (McIntyre); Module 2. Atomic force microscopy (Papernov); Module 3. Confocal microscopy (Lukishova). The laboratory components will use the facilities of the University of Rochester Integrated Nanosystems Center, the Institute of Optics and the Laboratory for Laser Energetics. Topics covered in the 50-min lab lectures include the nature of nanoscale surface forces in solids and principles of scanning force microscopy, function and capabilities of the scanning electron microscope, and confocal fluorescence microscopy of single nanoemitters. Students are expected to have completed a sequence in introductory physics with a strong performance in electromagnetism, the basics of modern physics and physical optics. Junior and Senior level.

OPT 256 OPTICS LABORATORY
Students rely on previous learning to create, align, collect data, solve and report on a variety of optical experiments.
Offered: Fall

OPT 257 OPTICS LABORATORY II
A continuation of OPT 256 for those who elect to try additional experimentation.
Offered: Spring

OPT 261 INTERFERENCE AND DIFFRACTION
Complex representation of waves; scalar diffraction theory; Fresnel and Fraunhofer diffraction and application to measurement; diffraction and image formation; optical transfer function; coherent optical systems, optical data processing, and holography.
Offered: Spring

OPT 262 ELECTROMAGNETIC THEORY
Vector analysis, Maxwell's equations, energy flow in electromagnetic fields, dipole radiation from Lorentz atoms, partially polarized radiation, spectral line broadening, dispersion, reflection and transmission, crystal optics, electro-optics, quantum optics.
Offered: Spring

OPT 270 BIOMEDICAL MICROSCOPY
This course covers the principles and practice of light microscopy as applied to biological and medical questions. Topics include basic light microscopy, DIC, phase epifluorescence, confocal and multiphoton laser-scanning microscopy, and selected methods such as CARS, FRET, FRAP, FCS, etc. This course is jointly listed as 470 for graduate students. Some homework problems are “470 only”.

OPT 276 BIOMEDICAL OPTICS
Biomedical spectroscopy (absorption, fluorescence, Raman, elastic scattering); propagation of photons in highly scattering media (such as tissue); techniques for high-resolution imaging in biological media: confocal imaging, multiphoton imaging and optical coherence tomography. Taught every other fall.

OPT 287 MATHEMATICAL METHODS FOR OPTICS & PHYSICS
Techniques used in mathematical study of optical phenomena. Emphasis on gaining insight and experience in the use of these powerful and elegant tools for describing, solving and resolving optical systems and schema.
Offered: Spring

OPT 307 SEM PRACTICUM
Overview of techniques for using the SEM (Scanning Electron Microscope) and Scanning Probe (AFM, STM) and analyzing data. Students perform independent lab projects by semester's end.
Offered: Spring

OPT 310 SENIOR DESIGN I
Specifications, project development, and project planning will include design alternatives and subsystem segmentation discussions.
Offered: Fall

OPT 311 OPTICS SENIOR DESIGN PROJECT
Documenting each stage, student teams design, build, and test an optical device or instrument for a faculty, community or industrial sponsor.
Offered: Spring

OPT 320 SENIOR THESIS I
Under faculty supervision, preparation for year-long independent research or participation in ongoing graduate group research. Students wishing to major in "Optics" will register for this course.

OPT 321 SENIOR THESSES II
With faculty supervision: reading, experimentation, and writing of final thesis and presentation of results. Students wishing to major in "Optics" will register for this course.

OPT 386V VISITING STUDENT IN OPTICS

OPT 390 SUPERVISED TEACHING

OPT 391 INDEPENDENT READING

OPT 393 SPECIAL ESSAY

OPT 394 UNDERGRADUATE RSRCH INTRNSHP

OPT 395 UNDERGRADUATE REARCH PROJECT

OPT 396 HONORS PROJECTS

OPT 407 SEM PRACTICUM
Overview of techniques for using the SEM (Scanning Electron Microscope) and Scanning Probe (AFM, STM) and analyzing data. Students perform independent lab projects commensurate with their graduate research.

OPT 411 MATH METH FOR OPTICS & PHY
Advanced techniques utilizing vector calculus, series expansions, contour integration, integral transforms (Fourier, Laplace and Hilbert) asymptotic estimates, and second order differential equations.

OPT 412 QUANTUM MECHANICS FOR OPTICS
This course covers the topics in modern quantum theory which are relevant to atomic physics, radiation theory, and quantum optics. The theory is developed in terms of Hilbert space operators. The quantum mechanics of simple systems, including the harmonic oscillator, spin, and the one-electron atoms, are reviewed. Finally, methods of calculation useful in modern quantum optics are discussed. These include manipulation of coherent states, the Bloch sphere representation, and conventional perturbation theory. Prerequisite: One course in undergraduate wave mechanics or permission of instructor. References: Cohen-Tannoudji, Diu and Laloe, Merzbacher, Schiff, Dirac.
Offered: Spring

OPT 413 INTRO TO RANDOM PROCESSES
Random signals and noise in linear systems. Selected topics in probability theory, random variables, random vectors, random sequences (random walk, Martingales, ARMA model, Markov chains), random processes (Poisson process, Gaussian process, Wiener process, Markov process), stationary and cyclostationary processes, random process inputs to linear systems, ergodicity, filtering, linear estimation, bandlimited and bandpass processes.
**OPT 414** DETECTION & ESTIMATION

Loss and utility; Bayesian inference; risk functions, randomized decisions, admissible decisions; empirical Bayes for unknown prior; Neyman-Pearson hypothesis testing, receiver operating characteristic; sufficient and minimal sufficient statistics and Rao-Blackwellization; unbiased estimation; minimum variance unbiased estimation and Cramer-Rao inequality, maximum likelihood estimation; nonparametric estimation of cdfs.

**OPT 421** OPT PROPERTIES OF MATERIALS

This is a course concerning the aspects of the solid state physics of semiconductors which influence their optical properties. Topics include: electrons and holes, bandstructures, k•p theory, Kramers-Kronig relations, phonons, polaritons, electrooptic effects, nonlinear optical effects. The physics of absorption, spontaneous and stimulated emission, reflection, modulation and Raman scattering of light will be covered. III-V semiconductors will be emphasized; other semiconductor material systems will also be mentioned. Optical properties of specific semiconductor material systems will be covered. Reduced dimensionality structures such as quantum wells will be contrasted with bulk semiconductors. Optoelectronic device applications of semiconductors will be mentioned, but not covered in detail.

Offered: Spring

**OPT 424** FUNDAMENTALS OF LASERS

Fundamentals and applications of laser systems, including optical amplification, cavity design, beam propagation and modulation. (For all graduate students EXCEPT Optics/Physics Students)

Offered: Fall

**OPT 425** RADIATION & DETECTORS

The course covers the following topics: emission of thermal radiation, modeling of optical propagation (radiometry), quantifying the human perception of brightness (photometry) and of color (colorimetry), fundamentals of noise in detection systems, parameters for specifying the performance of optical detectors, and a survey of several specific types of lasers. References: Boyd, Radiometry and the Detection of Optical Radiation; Kingston, Detection of Optical and Infrared Radiation.

Offered: Fall

**OPT 427** LIQUID CRYSTALS & OPTICS

This course will introduce the materials, terminology, effects, and devices used in the field of liquid crystal optics. Basic structures in nematic and cholesteric liquid crystals will be discussed and related to optical phenomena like transmittance, absorption, scattering, birefringence and selective reflection (the effect seen in scarab beetles and utilized to protect the OMEGA laser at LLE from blowing itself up). Two keys for device applications are LC chemical composition and molecular alignment, and these will be covered in order to understand the manufacture and operation of passive devices like wave plates and selective reflection polarizers. The basic electro-optics for active devices like EO switches and LC displays will also be covered. Other applications to be explored include mood rings, polarizing pigments for document security, smart windows, and car paint.

Offered: Spring

**OPT 428** OPTICAL COMMUNICATION SYSTEMS

The course is designed to give the student a basic understanding of the optical communication systems while making him aware of the recent technological advances. The following topics are covered: components of an optical communication system, propagation characteristics of optical fibers, lightwave sources such as light-emitting diodes and semiconductor lasers, optical receivers, noise analysis and bit error rate, coherent communication systems, multichannel communication systems, soliton-based communication systems. References: J. C. Palais, Fiber-Optics Communications, Prentice- Hall; E. E. Bert Basch, Optical-Fiber Transmission, Sams; Agrawal and Dutta, Long-Wavelength Semiconductor Lasers, Van- Nostrand Reinhold; Miller and Kaminow, Optical Fiber Telecommunications II, Academic.

Offered: Spring

**OPT 429** CHM BONDS:FROM MOLCLS TO MAT

An introduction to the electronic structure of extended materials systems from both a chemical bonding and a condensed matter physics perspective. The course will discuss materials of all length scales from individual molecules to macroscopic three-dimensional crystals, but will focus on zero, one, and two dimensional inorganic materials at the nanometer scale. Specific topics include semiconductor nanocrystals, quantum wires, carbon nanotubes, and conjugated polymers.
OPT 432 OPTO-MECHANICS
The mechanical design and analysis of optical components and systems will be studied. Topics will include kinematic mounting of optical elements, the analysis of adhesive bonds, and the influence of environmental effects such as gravity, temperature, and vibration on the performance of optical systems. Additional topics include analysis of adaptive optics, the design of lightweight mirrors, thermo-optics and stress-optics (stress birefringence) effects. Emphasis will be placed on integrated analysis which includes the data transfer between optical design codes and mechanical FEA codes. A term project is required.
Offered: Spring

OPT 433 OPT FAB AND TESTING TECH
This laboratory and lecture course is designed to give a firsthand working knowledge of optical glasses, their properties, and the methods for fabricating and characterizing high quality glass surfaces and components. Lectures will emphasize the physical and optical properties of glass, methods for manufacturing glasses, the component finishing process (grinding and polishing), cleaning, finished element specification, chemical durability and optical quality evaluation methods. New glasses and their applications in laser systems and nonlinear optics will be described. The laboratory is designed to expose the student to several varieties of optical glasses, the methods for cold working glass blanks, and the fabrication and testing of selected optical elements. Enrollment: 12 students maximum (priority to graduate Optics students). Text: Instructor’s notes, 450 pages provided to students in a 3-ring binder cost.

OPT 441 GEOMETRICAL OPTICS
This course is designed to give the student a basic working knowledge of image-forming optical systems. The course is oriented towards problem solving. Material covered includes: image formation, ray tracing and first-order properties of systems; magnification, F/number, and numerical aperture; stops and pupils, telecentricity vignetting; telescopes, microscopes, magnifiers, and projection systems; the Delano diagram; the eye and visual systems, field lenses; optical glasses, the chromatic aberrations, and their correction; derivation of the monochromatic wavefront aberrations and study of their effects upon the image; third order properties of systems of thin lenses; effects of stop position and lens bending; aplanatic, image centered, and pupil centered surfaces; and field flatteners. References: Smith, Modern Optical Engineering, McGraw-Hill; Lecture notes.
Offered: Fall

OPT 442 INSTRUMENTAL OPTICS
This course provides an in-depth understanding of the principles and practices of optical instrumentation: Optical metrology, including wavefront and surface metrology, interferometric instruments and interferogram analysis, coherence and coherence-based instruments, phase measurement and phase-shifting interferometry; spectroscopic instrumentation, including the Fourier transform spectrometer, the Fabry-Perot interferometer, and the grating monochromator; image plane characterization (star test, Ronchi test, and modulation transfer function); the influence of illumination and partial coherence on image forming systems, including microscopes, systems for projection lithography, and displays.
Offered: Spring

OPT 443 FUND OF MODERN OPT SYS
This course covers fundamental ray optics that are necessary to understand today’s simple to advanced optical systems. Included will be paraxial optics, first-order optical system design, illumination, optical glasses, chromatic effects, and an introduction to aberrations. References: Hecht, Optics (4th edition); Smith, Modern Optical Engineering; Lecture notes.
Offered: Fall

OPT 444 LENS DESIGN
Offered: Spring
OPT 445 PRECISION INSTRUMENT DESIGN
This course focuses teaching the multidisciplinary aspects of designing complex, precise systems. In these systems, aspects from mechanics, optics, electronics, design for manufacturing/assembly, and metrology/qualification must all be considered to design, build, and demonstrate a successful precision system. The goal of this class is to develop a fundamental understanding of multidisciplinary design for designing the next generation of advanced instrumentation.

OPT 446 OPTICAL THIN FILM COATINGS
This course addresses the design, manufacture and quality control of optical interference coatings. Topics covered include: reflection and transmission at an interface; the vector diagram; the Smith Chart; properties of periodic media; design of high reflectors, bandpass filters and edge filter; use of computer programs for design analysis; production techniques; thickness monitoring; and thickness uniformity calculations.
Offered: Fall

OPT 447 LIQUID CRYSTAL OPTICS
This course will introduce the student to the physical, chemical and optical properties of liquid crystals (LC) that are the basis for their wide and successful exploitation as optical materials for a broad variety of applications in optics, photonics and information display. Topics to be presented include: origins of LC physical properties in thermotropic and lyotropic materials as a function of chemical structure, influence of these structure-property relationships on macroscopic organization in LC mesophases, and the effect of molecular ordering and order parameter on properties of special significance for device applications. Operating principles for LC devices in a wide variety of applications will be described, including passive and tunable/switchable polarizers, wave plates, filters, information displays and electronic addressing, electronic paper, color-shifting polarizing pigments, optical modulators, and applications in photonics and lasers.
Offered: Spring

OPT 448 VISION AND THE EYE
This course will reveal the intricate optical and neural machinery inside the eye that allows us to see. It will describe the physical and biological processes that set the limits on our perception of patterns of light that vary in luminance and color across space and time, We will compare the human eye with the acute eyes of predatory birds and the compound eyes of insects. The course will also describe exciting new optical technologies for correcting vision and for imaging the inside of the eye with unprecedented resolution, and how these technologies can help us understand and even cure diseases of the eye. The class is intended to be accessible to advanced undergraduate students, especially those majoring in Optics, Biomedical Engineering, or Brain and Cognitive Science, but is recommended for anyone with a curiosity about vision or an interest in biomedical applications of optics. The course will also serve as an introduction to the study of vision for graduate students.
Offered: Spring

OPT 450 POLARIZATION
This course covers the fundamentals necessary to understand the behavior of fully and partially polarized light, and the significant range of applications and optical systems in which polarization is important. Topics include foundational electromagnetic theories of propagation and scattering, polarized plane waves, polarization eigenstates, Jones and Mueller Calculi, ellipsometry, polarization in multilayers and gratings, principles of polarization effects in focusing and imaging, polarization metrology, and topics in polarization coherence.

OPT 452 MED IMAGING-THEORY & IMPLEMENT
Physics and implementation of X-ray, ultrasonic, and MR imaging systems. Special attention on the Fourier transform relations and reconstruction algorithms of x-ray and ultrasonic-computer tomography, and MRI.

OPT 453 QUANTUM & NANO OPT LAB
This laboratory course (3 credits) will expose students to cutting-edge photon counting instrumentation and methods with applications ranging from quantum information to biotechnology and medicine. It will be based on quantum information, the new, exciting application of photon counting instrumentation. As much as wireless communication has impacted daily life already, the abstract theory of quantum mechanics promises solutions to a series of problems with similar impact on the twenty-first century. Major topics will be entanglement and Bell's inequalities, single-photon interference, single-emitter confocal fluorescence microscopy, Hanbury Brown and Twiss correlations/photon antibunching. Photonic based quantum computing and quantum cryptography will be outlined in the course materials as possible applications of these concepts and tools.
**OPT 456 OPTICS LABORATORY**


**OPT 461 Fourier Optics**

The principles of physical optics including diffraction and propagation based on Fourier transform theory; integral formulation of electromagnetic propagation; diffraction from apertures and scattering objects; applications to optics of Fourier transform theory, sampling expansions, impulse response, propagation through optical systems, imaging and transforming, optical transfer function, optical filtering; and selected topics of current research interest. Text: Goodman, Introduction of Fourier Optics; Class Notes; References: Born and Wolf, Principles of Optics; Gaskill, Linear Systems, Fourier Transforms and Optics; Papoulis, Systems and Transforms with Applications in Optics; Siegman, Lasers.

Offered: Fall

**OPT 462 Electromagnetic of Waves**

This course covers topics in electromagnetic theory that serve as a foundation for classical descriptions of many optical phenomena. A partial list of topics includes: review of Maxwell's equations, boundary conditions, and wave equations; polarization of light; crystal optics; vector, scalar, and Hertz potentials; radiation from accelerated charges; electric and magnetic dipole radiation; Lorentz atom description of the interaction of light with matter; scattering; optical waveguides.

Offered: Spring

**OPT 463 WAVE OPTICS & IMAGING**

This course provides the practicing optical engineer with the basic concepts of interference, diffraction, and imaging. Each topic will be reinforced with real-world examples. The interference section will include interferometry, Fabry-Perot etalons, and multilayer thin films. The diffraction and imaging sections will include, but are not limited to, diffractive optics, continuous and discrete Fourier transforms, convolution theory, and Linear Systems. References: Hecht, Optics (4th edition); Goodman, Introduction to Fourier Optics; Lecture notes.

Offered: Fall

**OPT 464 NANOPHOT/NANOMECH DEVICES**

This course aims to provide students with the understanding of fundamental principles governing optical and mechanical phenomena at micro/nanoscopic scale, with focus on current research advances on device level. The following topics will be covered: Fundamental concepts of micro-/nanoscopic optical cavities and mechanical resonators; various types of typical nanophotonic and nanomechanical structures; fabrication techniques; theoretical modeling methods and tools; typical experimental configurations; physics and application of optomechanical, quantum optical, and nonlinear optical phenomena at mesoscopic scale; state-of-the-art devices and current research advances. References: primarily based on recent literature

**OPT 465 PRINCIPLES OF LASERS**

This course provides an up-to-date knowledge of modern laser systems. Topics covered include quantum mechanical treatments to two-level atomic systems, optical gain, homogenous and inhomogenous broadening, laser resonators and their modes, Gaussian beams, cavity design, pumping schemes, rate equations, Q switching, mode-locking, various gas, liquid, and solid-state lasers.

Offered: Spring

**OPT 467 NON-LINEAR OPTICS**

Fundamentals and applications of optical systems based on the nonlinear interaction of light with matter. Topics to be treated include mechanisms of optical nonlinearity, second-harmonic and sum- and difference-frequency generation, photonics and optical logic, optical self-action effects including self-focusing and optical soliton formation, optical phase conjugation,

Offered: Fall

**OPT 468 WAVEGUIDES & OPTOELECTRONIC DEVICES**

This course covers the propagation and interactions in optical waveguides. Topics to be covered include: the Goos-Haenchen effect; modes on the planar waveguide; coupled-mode theory; modes on the optical fiber; pulse broadening in optical fibers; coupling between guided-wave structures; waveguide devices such as semiconductor lasers; fiber lasers and amplifiers; passive components and electro-optics devices.

Offered: Fall

**OPT 476 BIOMEDICAL OPTICS**

Biomedical spectroscopy (absorption, fluorescence, Raman, elastic scattering); propagation of photons in highly scattering media (such as tissue); techniques for high-resolution imaging in biological media: confocal imaging, multiphoton imaging and optical coherence tomography. Taught every other fall.

**OPT 481 TECHNICAL ENTREPRENEURSHIP**

This course provides an opportunity to examine the management practices associated with innovation and new business development. The analysis of entrepreneurship is evaluated from the perspective of start-up ventures and established companies. There is an appraisal of the similarities and differences in the skills and the functions required to develop successful projects in both types of situations. A range of management issues is discussed, including organizational development, analysis of market opportunities, financial planning and control, capitalization, sources of funds, the due-diligence process, and valuing the venture.

Course Approach: To expose students to various facets of new venture management and entrepreneurship, classes will consist of lectures, evaluation of current business situation, and presentations by guest speakers. Furthermore, two (one for engineers) case studies must be prepared for the credit.

Offered: Spring

**OPT 482 SYS INTEGRATION & PROD DEV**

In this class we will explore the ISO 9000 product development process and illustrate how to use this process to develop both products and research systems that meet necessary specifications. The class will use systems such as video projectors, CD-ROM drives, bar-code scanners and scanning laser microscopes as examples to illustrate the various concepts.

**OPT 491 MASTER’S READING IN OPTICS**

**OPT 492 SP TOP: THz Phenomenon & Technology**

THz technology session provides the fundamentals of free-space THz optoelectronics for sensing, imaging and spectroscopy applications. A free-space THz-ray optoelectronic system, with diffraction-limited spatial resolution, femtosecond temporal resolution, DC-THz spectral bandwidth, and mV/cm field sensitivity, will be central to the course. We will cover the basic concepts of generation, detection and propagation of T-rays, and their applications. Students will learn how up-to-the-minute results in THz laboratories apply to research and development. Students will learn advanced systems with THz time-domain spectroscopy, optical rectification, electro-optic sampling, THz gas laser, Gunn diodes and Schottky diodes, and FTIR. Many newly developed THz systems at Rochester will be the examples used in this course. Ultrafast Phenomena session covers the methods for optical measurement with short laser pulses. Short laser pulse generation, amplification, detection, and characterization will be discussed.

Offered: Spring

**OPT 493 MASTER’S ESSAY**

**OPT 494 RESEARCH IN OPTICS**

**OPT 495 MASTER’S RESEARCH IN OPTICS**

**OPT 511 ADV MATH METHODS IN OPTICS**
This course focuses on advanced numerical and analytical techniques that are likely to be useful for PhD-level Optics students. It will begin with a review of numerical errors and then develop simple algorithms for solving nonlinear algebraic and differential equations. The later half of the course will cover several analytical techniques useful for solving ordinary and partial differential equations encountered in various areas of optics and photonics. Students will be given weekly homework problems based on the material covered each week. Course Textbook: S. Chapra, Applied Numerical Methods with MATLAB, 3rd edition (McGraw-Hill, 2011).

OPT 533 QUANTUM OPTICS ATOM FLD INT

OPT 544 ADVANCED LENS DESIGN
Complex zoom lenses and multi-mirror reflective systems are discussed detail starting with first principles. Other topics include materials for other wavelength bands, tolerancing, sensitivity analysis, monte carlo analysis, ghost and stray light analysis. Students required to complete two complex group design projects.
Offered: Fall

OPT 551 INTRO TO QUANTUM OPTICS
An introduction to quantum and semiclassical radiation theory with special emphasis on resonant and near-resonant interactions between atoms and optical fields. Topics covered include field quantization, Weisskopf-Wigner and Jaynes-Cummings models, the optical Bloch equations, resonant pulse propagation, homogeneous and inhomogeneous broadening, adiabatic and non-adiabatic transitions, and dressed states.
Offered: Fall

OPT 561 ADVANCED IMAGING
Advanced topics in imaging, concentrating on computed imaging, Fourier-transform-based imaging, and unconventional imaging, with emphasis on imaging through aberrating media (particularly atmospheric turbulence), in mathematical depth. Topics are selected from the following: stellar (speckle, Michelson, and intensity) interferometry, wavefront sensing for adaptive optics, phase diversity; pupil-plane lensless laser imaging including 2-D and 3-D digital holography, imaging correlography, and X-ray diffraction imaging; Lyot coronography, synthetic-aperture radar, Fourier telemetry, Fourier-transform imaging spectroscopy, structured-illumination superresolution, optical coherence tomography, extended-depth-of-field imaging, and synthetic-aperture radar.

OPT 564 THRY OF ELECTRONIC IMAG'G SYS
With a definite systems orientation, we will study topics in diffraction theory, coherence, signal processing, detection theory, digital image processing, spatial and frequency domain filtering, and statistical optics as they apply to systems for imaging, digital cameras and remote sensing. Regular problem sets will be assigned together with request-for-proposal (RFP) topics, so that the advanced graduate student will obtain experience in the technical aspects of preparing systems proposals. Students will prepare a final oral presentation (no other final examination) to brief the class on a topic related to the course material. Lecture topics will be advanced diffraction theory & photomixing, ICIS - digital camera systems, coherence Theory, synthetic aperture systems, laser radar systems, digital image processing fundamentals, computer tomography systems, Speckle and remote sensing, holography & diffractive optics.
Offered: Fall

OPT 591 PHD READING COURSE

OPT 592 MODERN COHERENCE THEORY
Theory of random processes, stationary ergodicity, the auto-correlation function and the cross-correlation function of random processes. Spectrum of a stationary random process and the Wiener-Khintchine theorem, second-order coherence theory in the space-time domain, the mutual coherence function, the degree of coherence. Second-order coherence theory in the space-frequency domain, the cross spectral density, mode representation, propagation problems, inverse radiation problems, effects of source correlations and scattering of partially coherent light from deterministic and from random media.

OPT 594 INTERNSHIP

OPT 595 PHD RESEARCH IN OPTICS
OPT 595A PHD RESEARCH IN ABSENTIA
OPT 595B PHD RSRCH IN ABSENTIA ABROAD
OPT 596 OPTICS COLLOQUIUM
OPT 890 M.S. CO-OP PROGRAM IN OPT
OPT 894 CO-OP PROGRAM IN OPTICS
OPT 895 CONT OF MASTER'S ENROLLMENT
OPT 897 MASTER'S DISSERTATION
OPT 897B MASTER'S IN ABSENTIA
OPT 899 MASTER'S DISSERTATION
OPT 899A MASTERS DISSERTATN ABSENTIA
OPT 985 LEAVE OF ABSENCE
OPT 986V FULL TIME VISITING STUDENT
OPT 987V PART TIME VISITING STUDENT
OPT 990 SUMMER IN RESIDENCE
OPT 995 CONT OF DOCTORAL ENROLLMENT
OPT 997 DOCTORAL DISSERTATION
OPT 997A DOCT DISSERTATN IN ABSENTIA
OPT 997B PHD IN ABSENTIA ABROAD
OPT 999 DOCTORAL DISSERTATION
OPT 999A DOCT DISSERTATN IN ABSENTIA
OPT 999B DOC DISS IN-ABSENTIA ABROAD

PEC 575 POLITICAL ECONOMY I
Models-based course covering fundamental topics in theoretical political economy. Voting, electoral competition, special interest politics and political accountability. Highlights include institutional features shaping public policy and institutional design. Collective decisions viewed as outcomes of game played by individual decision-makers. Empirical motivations for and implications of the political economy models will be discussed.

PEC 582 POLITICAL ECONOMY II
Modern game-theoretic literature on models of voting and elections. Exposure to techniques and models used in this line of research. Topics include probabilistic voting, policy-motivated candidates, candidate entry, strategic voting, and issues of information in elections including uncertainty on the part of voters and candidates, and problems associated with private information in elections. Both complete and incomplete information models will be covered, students must have a working knowledge of Bayesian games prior to taking this course.
Offered: Spring

**PH 101 INTRO TO PUBLIC HEALTH**

Discussion of history and definitions of public health and emerging themes: Public Health Disparities (health and wealth; social justice); Issues in Public Health (lead poisoning; tobacco; obesity; emergency; clean water/air; injury; health systems/reform); and Global Health Issues (globalization and development; maternal and child health).

Offered: Fall Spring

**PH 102 INTRO TO PUBLIC HEALTH II**

Introduction to four core areas of public health: biostatistics, health policy and management, environmental health science, and social and behavioral sciences.

Offered: Spring

**PH 103 CONCEPTS OF EPIDEMIOLOGY**

Fundamental concepts underlying health-related information and health policy. Basic methodological principles used to describe disease occurrence in populations and identify causes of disease.

Offered: Fall

**PH 116 INTRO TO THE U.S. HLTH SYSTM**

The organization, financing, and functioning of the United States health care system. Also historical perspectives and the insights of international comparisons. Topics covered include the economics of U.S. health system, access to care, health policy and politics, and disability and disability politics.

**PH 201 ENVIRONMENTAL HEALTH**

This course covers the basic principles used to evaluate the potential human health risk of exposure to environmental contaminants in air, water, and food.

Offered: Spring

**PH 206 FEMINISM GENDER AND HEALTH**

**PH 215 PUBLIC HEALTH ANTHROPOLOGY**

Using a critical lens, this course examines how forms of social organization create global health for some groups and poor health for other groups.

Offered: Spring

**PH 216 PEER HEALTH ADVOCACY**

Contemporary issues for college students: alcohol, drugs, and sexual health topics. Focus on peer level interactions to encourage behavior change and conversational leadership among peer groups.

Offered: Fall

**PH 226 METHODS IN HEALTH CULTURE**

Fieldwork (qualitative, or ethnographic) research involves preparing and undertaking one or more methods for gaining experiential knowledge into other cultural worlds. Fieldwork research methods provide a lens for examining human behavior, often in cross-cultural contexts, and for understanding what it means to live in a community of both common and diverse interpretations of illness and health. The growing body of critical work in fieldwork methodology has seen refined definitions and revised ethical practices, ultimately encouraging more egalitarian methods of conducting, inscribing, and disseminating research. We explore recent theoretical debates about fieldwork research and writing practices, learning how to take into account multiple subjectivities and inscribe difference in a respectful, reflexive manner. Students will engage in fieldwork research (including participant-observation, and conducting ethnographic interviews).

Offered: Fall

**PH 227 MUS ETHNOGRAPHY & HIV**
PH 230 PUBLIC HEALTH LAW

PH 236 HEALTH CARE AND LAW
This course provides an introduction to the legal foundations of health care in America. The material covers a broad range of legal issues in health care, including autonomy, privacy, liberty, and proprietary interests, from the perspective of the provider(s) and the patient.
Offered: Spring

PH 265 GLOBAL HEALTH
This course uses social theories to frame current issues in global health. Readings include critiques of development and ethnographic methods.
Offered: Spring

PH 299A FIELD WORK METHODS IN PH
Seminar for public health students scheduled for summer travel to Ladakh to work on the longitudinal tobacco control program with Dr. Chin.
Offered: Spring

PH 299B FIELD ANALYSIS
Seminar for students returning from the longitudinal tobacco control project in Ladakh. Emphasis is on data analysis and writing-up findings.
Offered: Fall

PH 300W SEMINAR IN BIOETHICS
Intended as a capstone experience, this course provides a setting in which students bring together what they have learned in the major and hone their skills by exploring in-depth two or three central issues in bioethics of particular interest to the participants.

PH 390 SUPERVISED TEACHING

PH 391 INDEPENDENT STUDY

PH 391W INDEPENDENT STUDY

PH 393 SENIOR PROJECT

PH 394 INTERNSHIP

PH 395 HONORS RESEARCH

PH 396 TEACHING ASSISTANT: PH 101

PH 396A TEACHING ASSISTANT: PH 101

PH 396B TEACHING ASSISTANT: PH 103

PH 396C TEACHING ASSISTANT: PH 215

PH 396D TEACHING ASSISTANT: PH 265

PH 397A COMMUNITY ENGAGEMENT INTERNSHIP
This is a mentored field experience applying principles of community engaged practice in real world settings. Students work 8 hours/week with a community agency and attend a weekly 75-minute on-campus seminar for discussion.
PH 397W COMMUNITY ENGAGED INTERSHIP
This is a mentored field experience applying principles of community engaged practice in real world settings. Students work 8 hours/week with a community agency and attend a weekly 75-minute on-campus seminar for discussion.
Offered: Fall Spring

PH 398 PUBLIC HEALTH HONORS SEMINAR
A forum where students who have been accepted into the Public Health Honors program present preliminary versions of their theses and get critical feedback from both their student colleagues and the instructor.

PH 398A PH SENIOR HONORS RESEARCH
A year-long research project culminating in a written work supervised by a faculty thesis adviser and the program designated honors adviser.
Offered: Fall

PH 398B PH SENIOR HONORS SEMINAR
A year-long research project culminating in a written work supervised by a faculty thesis adviser and the program designated honors adviser.
Offered: Spring

PHL 101 INTRODUCTION TO PHILOSOPHY
Methods of philosophical inquiry and a variety of philosophical problems of perception and reality, personal identity, freedom and responsibility, existence of a supreme being, morality, knowledge and skepticism.
Offered: Fall Spring

PHL 102 ETHICS
Leading theories of right and wrong, good and evil, and related matters such as the functions of ethical language and the reality or unreality of moral knowledge.
Offered: Fall Spring

PHL 103 CONTEMPORARY MORAL PROBLEMS
Reasoned analysis of controversies concerning such matters as the death penalty, abortion, individual rights, sexual harassment and discrimination, global justice, terrorism and civil liberties, animal rights and the environment.

PHL 104 INTRO TO KANT & HEGEL
Introduction to two seminal thinkers in the history of modern philosophy and political theory: the German philosophers, Immanuel Kant (1724-1804) and G.W.F. Hegel (1770-1831). To explore the roots of the two dominant traditions in contemporary philosophy.

PHL 105 REASON AND ARGUMENT
Methods of identifying, interpreting, reconstructing, and evaluating reasoning found in speeches, essays, editorials, magazine articles, and scientific reports. Analytical methods mastered in this course do not include those of formal symbolic logic.

PHL 107 ETHICS & SCIENCE OF STEM CELLS
An examination of both the science behind stem cell research and the ethical issues raised by it.

PHL 109 JUSTICE AND EQUALITY

PHL 110 INTRODUCTORY LOGIC
Symbolic logic through first-order quantification theory. Skill in deductive inference is strengthened through construction of proofs and other methods of a rigorously defined artificial language.

**PHL 111 PHILOSOPHY OF RELIGION**
Historical and recent readings are used to analyze issues such as: existence of God, divine attributes, the relation of God to the world, and faith and reason.

**PHL 118 BUSINESS ETHICS**
Questions and principles of business ethics: moral responsibilities of corporations, truth in advertising, sales practices, bribery, environmental issues, economic justice, nature of the employment contract, whistle-blowing, affirmative action, sexual harassment, corporate organization.
Offered: Spring

**PHL 152 SCIENCE AND REASON**
The nature of science and its relationship to religion: Are there criteria that distinguish science from non-science? Is there such a thing as the scientific method? Has knowledge advanced steadily through the history of science? What role do values play in science? Do science and religion conflict? Is intelligent design science?
Offered: Spring

**PHL 171 PHIL FOUNDATION OF FEMINISM**
Contemporary feminist theory: the conception of women expressed through our practices, laws, theories and literature; equality and equal rights; sex roles and gender specific language; power relations and self-determination; marriage and maternity.
Offered: Spring

**PHL 201 HISTORY OF ANCIENT PHILOSOPHY**
Survey of the origins of Western philosophy, from the Presocratics through Hellenistic philosophy six centuries later. The great philosophers of the Classical period, Socrates, Plato, Aristotle, are studied in detail.

**PHL 202 HISTORY OF MODERN PHILOSOPHY I**
Philosophical responses of the 17th and 18th centuries to the new science and methodology of Galileo and others. Readings from Galileo, Descartes, Leibniz, Newton, Locke, Berkeley, Hume, on methodology, motion, space and time, causality, perception, the mind-body problem.
Offered: Spring

**PHL 214 LOGICAL METHODS**
The tools of formal logic and set theory most widely used in contemporary philosophical analysis, such as modal propositional logic and applications: logics of necessity and possibility, tense logic, the logic of counterfactuals, modal predicate logic.

**PHL 215 INTERMEDIATE LOGIC**

**PHL 216 MATHEMATICAL LOGIC**
Metatheory of first-order logic. Relationships between validity and provability are addressed through proofs of the consistency and completeness of one or more systems.

**PHL 217 UNCERTAIN INFERENCE**
Analysis of inference outside logic and mathematics. Probability theory and nonmonotonic logic are used to address uncertainty arising from uncertain premises and rules of inference that are not truth preserving.

**PHL 220 RECENT ETHICAL THEORY**
Twentieth century classics on questions of moral theory: What makes some acts morally right? How could we ever know what has value and what we morally ought to do? Are there any universally applicable ethical norms, or is morality subjective or otherwise relative?
PHL 220W RECENT ETHICAL THEORY
Twentieth century classics on questions of moral theory: What makes some acts morally right? How could we ever know what has value and what we morally ought to do? Are there any universally applicable ethical norms, or is morality subjective or otherwise relative?
Offered: Spring

PHL 221 PHILOSOPHICAL FOUNDATIONS OF AMERICAN REVOLUTION
Political theory associated with the revolution and US Constitution, considered in historical context: predecessors such as John Locke, Montesquieu, and David Hume; works by Thomas Paine and Thomas Jefferson; the Federalist Papers and anti-Federalist works.

PHL 221W AMERICAN REVOLUTION
Political theory associated with the revolution and US Constitution, considered in historical context: predecessors such as John Locke, Montesquieu, and David Hume; works by Thomas Paine and Thomas Jefferson; the Federalist Papers and anti-Federalist works.

PHL 223 SOCIAL & POLITICAL PHILOSOPHY
Nature and justification of government and democracy, conflict and revolution, relations between church and state, moral relations of individuals to government, individual freedom, economic justice. Classic and contemporary readings.

PHL 223W SOCIAL & POLITICAL PHILOSOPHY
Nature and justification of government and democracy, conflict and revolution, relations between church and state, moral relations of individuals to government, individual freedom, economic justice. Classic and contemporary readings.

PHL 224 HISTORY OF ETHICS
Theories of ethics throughout history: Socrates, Plato, Aristotle, Augustine, Aquinas, Hume, Kant, Mill, Nietzsche.

PHL 224W HISTORY OF ETHICS
Theories of ethics throughout history: Socrates, Plato, Aristotle, Augustine, Aquinas, Hume, Kant, Mill, Nietzsche.

PHL 225 ETHICAL DECISIONS IN MEDICINE
Principled examination of the ethical dimensions of medical decisions: respect for life, quality of life, patient privacy and autonomy, quality of care, conflicts of interest, allocation of health care resources.

PHL 225W ETHICAL DECISIONS IN MEDICINE

PHL 226 PHILOSOPHY OF LAW
Theories of law and normative and conceptual problems in specific areas of law: transitional justice, jurisdiction, problems of legal interpretation, criminal attempts, the logic of fault, wrongful gain and compensation, moral limitations on freedom of contract, legal aspects of terrorism and torture, etc.
Offered: Spring

PHL 226W PHILOSOPHY OF LAW
Theories of law and normative and conceptual problems in specific areas of law: transitional justice, jurisdiction, problems of legal interpretation, criminal attempts, the logic of fault, wrongful gain and compensation, moral limitations on freedom of contract, legal aspects of terrorism and torture, etc.
Offered: Spring

PHL 227 THE MEANING OF LIFE
Difficult questions about meaning in life are of perennial concern to philosophers and many other reflective people. The course looks closely and critically at these questions and traditional and contemporary answers.

**PHL 228 PUBLIC HEALTH ETHICS**
Examines the values of health, social needs, and freedom through a systematic examination of situations in which these conflicts arise. Public health ethics lie at the intersection of medicine, political philosophy, and public policy.

**PHL 228W PUBLIC HEALTH ETHICS**
Examines the values of health, social needs, and freedom through a systematic examination of situations in which these conflicts arise. Public health ethics lie at the intersection of medicine, political philosophy, and public policy.

**PHL 229 PHILOSOPHY OF EDUCATION**
Theories and controversies about the nature and aims of education; boundaries of educational authority; educational adequacy, equality, and justice; learning, inquiry, knowledge, and critical thinking; the measurement of learning; moral and civic education; patriotism, evolution, and sex in the curriculum.

**PHL 229W PHILOSOPHY OF EDUCATION**
Theories and controversies about the nature and aims of education; boundaries of educational authority; educational adequacy, equality, and justice; learning, inquiry, knowledge, and critical thinking; the measurement of learning; moral and civic education; patriotism, evolution, and sex in the curriculum.

**PHL 230 ENVIRONMENTAL JUSTICE**
Environmental justice and sustainability, both domestic and global, bringing philosophical and systems analysis to bear on environmental degradation, transparency and governance, climate change, the ethics of consumption and development, responsibility to future generations.
Offered: Spring

**PHL 230W ENVIRONMENTAL JUSTICE**
Environmental justice and sustainability, both domestic and global, bringing philosophical and systems analysis to bear on environmental degradation, transparency and governance, climate change, the ethics of consumption and development, responsibility to future generations.
Offered: Spring

**PHL 241 AESTHETICS**

**PHL 242 METAPHYSICS**
Investigates topics in contemporary metaphysics, including questions about the existence and persistence conditions of abstract and material objects; the nature of space and time; the possibility of time travel; the status of quantum mechanics. No prior courses in science required.

**PHL 242W METAPHYSICS**
Investigates topics in contemporary metaphysics, including questions about the existence and persistence conditions of abstract and material objects; the nature of space and time; the possibility of time travel; the status of quantum mechanics. No prior courses in science required.

**PHL 243 THEORY OF KNOWLEDGE**
Addresses these and related questions using contemporary philosophical readings: What is knowledge? Do people really know anything? What makes a belief justified or rational?

**PHL 243W THEORY OF KNOWLEDGE**
Addresses these and related questions using contemporary philosophical readings: What is knowledge? Do people really know anything? What makes a belief justified or rational?
PHL 244 PHILOSOPHY OF MIND
Overview and assessment of recent debates in philosophy of mind, focusing on the relationship between the mind and the physical world: physicalism about the mind; behaviorism, the identity theory, and functionalist theories of mind; consciousness and mental content; mental causation.

PHL 244W PHILOSOPHY OF MIND
Overview and assessment of recent debates in philosophy of mind, focusing on the relationship between the mind and the physical world: physicalism about the mind; behaviorism, the identity theory, and functionalist theories of mind; consciousness and mental content; mental causation.

PHL 247 PHILOSOPHY OF LANGUAGE
General nature of language and specific puzzles about language: the nature of truth and meaning, speech acts, reference, propositional attitudes, metaphor, understanding, interpretation, indeterminacy, etc.

PHL 247W PHILOSOPHY OF LANGUAGE
General nature of language and specific puzzles about language: the nature of truth and meaning, speech acts, reference, propositional attitudes, metaphor, understanding, interpretation, indeterminacy, etc.

PHL 249 FORMAL SEMANTICS
An in-depth introduction to the formal analysis of natural language meaning, employing techniques that have been developed in language and formal philosophy over the last century. Issues include intensionality, quantification, tense, presupposition, plurality, the analysis of discourse, and other current issues. Familiarity with syntax, logic, and/or computation are helpful but not necessary.
Offered: Spring

PHL 251 PHILOSOPHY OF BIOLOGY
Primary focus is the nature, scope, and variety of biological explanations. Possible topics: fitness, natural selection and drift; whether there are biological laws; the degree of contingency of evolutionary outcomes; biological function; the scope of adaptationist explanations. No prior philosophy of science or biology is assumed.

PHL 251W PHILOSOPHY OF BIOLOGY
Primary focus is the nature, scope, and variety of biological explanations. Possible topics: fitness, natural selection and drift; whether there are biological laws; the degree of contingency of evolutionary outcomes; biological function; the scope of adaptationist explanations. No prior philosophy of science or biology is assumed.

PHL 252 PHILOSOPHY OF SCIENCE
Survey of primarily metaphysical questions about science: Must the entities posited by a scientific theory exist for it to be successful? Do laws of nature govern the world or simply articulate patterns? How are lower and higher level scientific theories related to one another? Is scientific explanation primarily concerned with laws, with causes, or with something else?

PHL 252W PHILOSOPHY OF SCIENCE
Survey of primarily metaphysical questions about science: Must the entities posited by a scientific theory exist for it to be successful? Do laws of nature govern the world or simply articulate patterns? How are lower and higher level scientific theories related to one another? Is scientific explanation primarily concerned with laws, with causes, or with something else?

PHL 255 TOPICS IN PHL OF PHYSICS

PHL 255W TOPICS IN PHL OF PHYSICS

PHL 256 DARWIN & RELIGION
Equal parts science, history, and philosophy, on the interaction of science and religion: the rise of modern science and challenges it has posed to religious culture in Europe and America; attitudes toward biblical literalism; Darwin's evolving
scientific, philosophical, and religious views; the relevance of Darwinism to debates over the relationship between science and religion. Reading-intensive and discussion-based.

**PHL 256W DARWIN & RELIGION**

**PHL 260 TOPICS IN PHILOSOPHICAL THEOL**
A seminar devoted to a selected topic in philosophy of religion.
Offered: Spring

**PHL 261 KANT**
Philosophy of Immanuel Kant: primarily the "Critique of Pure Reason," but also issues of practical and moral philosophy such as volition and free-will.
Offered: Spring

**PHL 262 FRENCH PHILOSOPHY SINCE 1960**

**PHL 263 JEWISH PHILOSOPHY**

**PHL 264 MODERN JEWISH PHILOSOPHY**

**PHL 265 SELECT TOPICS IN ANCIENT PHILOSOPHY**
Foundations of Ancient Greek philosophy from Presocratic to Hellenistic periods. Covers ancient Greek ethics, metaphysics and epistemology, philosophy of mind. Special attention to Plato and Aristotle.

**PHL 265W SELECT TOP IN ANCIENT PHILOS**
Foundations of Ancient Greek philosophy from Presocratic to Hellenistic periods. Covers ancient Greek ethics, metaphysics and epistemology, philosophy of mind. Special attention to Plato and Aristotle.

**PHL 266 RATIONALISM**
Works of Descartes, Spinoza, and Leibniz, concentrating on the metaphysics, epistemology, logic, and philosophy of mind.

**PHL 267 BRITISH EMPIRICISM**
Works of Francis Bacon, John Locke, and David Hume, examining their views on the nature of induction and empirical knowledge.

**PHL 268 AUGUSTINE, ANSELM & AQUINAS**
Three formative philosophical treatments of religious belief on such topics as the existence of God, freedom, providence, and evil.

**PHL 270 SELECTED TOPICS IN MODERN PHI**

**PHL 279 TRINITY, INCARNATION, ATONEMENT**

**PHL 285 LEGAL REASONING & ARGUMENT**

**PHL 291 SARTRE & HEIDEGGER**

**PHL 292 PHILOSOPHY OF ART**

**PHL 300 SEMINAR FOR MAJORS**
Capstone seminar for philosophy majors, it serves as the main writing course for the major. Explores a limited number of changing topics in depth. Limited to students with concentrations and minors in philosophy.
Offered: Spring

**PHL 311W** SEMINAR IN BIOETHICS

**PHL 312** NEUROETHICS

**PHL 312W** NEUROETHICS

**PHL 327** THEORY OF PERCEPTION

**PHL 385** LEGAL REASONING & ARGUMENT

This course will teach students about the American trial process - both in theory and in practice. Students will learn the theory behind the adversarial system and the various procedural and evidentiary rules in place to achieve the system's goals. Students will also learn the practical skills and techniques used to conduct a trial, including opening statements, direct examinations, cross examinations, closing arguments, and objections. Students will be graded on a combination of traditional assignments and quizzes as well as on practical exercises performed individually as well as in teams. The final examination will consist of a mock trial between two or more teams using a fictional fact pattern involving a civil or criminal case.

**PHL 390** SUPERVISED TEACHING

Offered: Fall Spring

**PHL 391** INDEPENDENT STUDY

The reading of philosophical literature under guidance, for seniors majoring in philosophy.

Offered: Spring

**PHL 391W** INDEPENDENT STUDY

**PHL 392** HONORS TUTORIAL

Offered: Fall Spring

**PHL 393** HONORS THESIS

Offered: Fall Spring

**PHL 394** INTERNSHIP

Offered: Fall Spring

**PHL 396** INTERNSHIP SEMINAR

Interns work with elementary school children, usually in the fourth and fifth grade, on thinking and writing strategies. Specific projects taken up in classes include organizing debates among students on contemporary issues, writing argumentative essays, and analyzing the persuasive techniques used in advertising. Interns spend several hours per week in their classes and attend biweekly internship meetings. Meetings will be scheduled at a mutually convenient time. Academic credit for the internship is based on a satisfactory report from the supervising teacher, participation in internship meetings, and a final paper which describes and reflects on the intern's classroom activities and examines the connections between those activities and selected readings.

Offered: Fall Spring

**PHL 414** LOGICAL METHODS

**PHL 415** INTERMEDIATE LOGIC

**PHL 416** MATHEMATICAL LOGIC

This course is an introduction to the metatheory of first-order logic. The relationships between validity and provability are addressed through proofs of the consistency and completeness of one or more systems.
PHL 420 RECENT ETHICAL THEORY
The course will be a study of the work of major twentieth century philosophers on fundamental questions in ethics, such as: What is really meant by value terms like "good", "evil", "right", and "wrong"? How could we ever know what has value and what we morally ought to do? Are there any universally applicable ethical norms, or is morality subjective or otherwise relativized? Readings from Moore, Ross, Ayer, Stevenson, etc. This course may be taken for upper-level writing credit.
Offered: Spring

PHL 421 PHILOSOPHICAL FOUNDATIONS OF AMERICAN REVOLUTION
In this course, we will examine the philosophical foundations of the American Revolution by examining the political theory which lies behind the revolution itself and which underlies the foundations of the Constitution, while keeping an eye at the historical contexts that shaped the philosophy. We will begin by looking at the important predecessors to the revolution, particularly the works of John Locke, Montesquieu, and David Hume. We will then consider important works from the period surrounding the revolution, including works by Thomas Paine and Thomas Jefferson. Finally, we will look at the debates surrounding the adoption of the U.S. Constitution, including the Federalist Papers and important anti-Federalist works.

PHL 423 SOCIAL & POLITICAL PHILOSOPHY

PHL 424 HISTORY OF ETHICS
A study of the theoretical thinking about ethics throughout history. The primary emphasis is on Western figures, such as Socrates, Plato, Aristotle, Augustine, Aquinas, Hume, Kant, Mill, Nietzsche.

PHL 426 PHILOSOPHY OF LAW
This course will examine the nature of law in common law legal systems. It will proceed historically, beginning with Aquinas, mentioning Blackstone, examining Bentham and Austin, mentioning Gray, examining Holmes, Hart, and Dworkin. Topics emphasized will include the relation between Law and Morality, the nature of legal interpretation, with emphasis on the role of precedent in common law, the nature of legal rules, and the issue of the completeness of law. Written work will include two short (ca. 5 pages) papers, mid-term, final exam, and periodic quizzes. Regular class attendance is expected.
Offered: Spring

PHL 428 PUBLIC HEALTH ETHICS

PHL 429 PHILOSOPHY OF EDUCATION

PHL 430 ENVIRONMENTAL JUSTICE
Environmental injustice occurs whenever some individual or group bears unjustifiable environmental risks, lack of access to environmental goods, or lack of opportunity to participate in environmental decision-making. This course will examine issues of environmental justice, both local and global, bringing philosophical analysis to bear on case studies and topics ranging from toxic exposure and land rights, to energy, global warming, and responsibility to future generations.
Offered: Spring

PHL 441 AESTHETICS

PHL 442 METAPHYSICS

PHL 443 THEORY OF KNOWLEDGE

PHL 444 PHILOSOPHY OF MIND

PHL 447 PHILOSOPHY OF LANGUAGE

PHL 449 FORMAL SEMANTICS
See Linguistics 265.
Offered: Spring
PHL 451 PHILOSOPHY OF BIOLOGY

PHL 452 PHILOSOPHY OF SCIENCE

PHL 455 TOPICS IN PHIL OF PHYSICS

PHL 456 DARWIN & RELIGION

PHL 460 TOPICS IN PHILOSOPHICAL THEOL
See Religion and Classics, REL 291.
Offered: Spring

PHL 461 KANT
A study of the philosophy of Immanuel Kant focusing on the "Critique of Pure Reason". The course will also pay some attention to several issues in Kant’s practical and moral philosophy such as his account of volition and the free-will problem.
Offered: Spring

PHL 465 SELECT TOP IN ANCIENT PHILOS

PHL 466 RATIONALISM

PHL 467 BRITISH EMPIRICISM
The course examines the British Empiricist School's views on the nature of induction and empirical knowledge. Our readings will be drawn from the works of Francis Bacon, John Locke, and David Hume. There will be both lectures and class discussions.

PHL 468 AUGUSTINE, ANSELM & AQUINAS
Please see Religion and Classic REL 230.

PHL 470 SELECTED TOPICS IN MODRN PHL

PHL 479 TRINITY, INCARNATION, ATONEMENT

PHL 491 MASTER’S READINGS IN PHL
Offered: Fall Spring

PHL 493 MASTER’S ESSAY
Offered: Spring

PHL 495 MASTER’S THESIS RESEARCH
Offered: Fall Spring

PHL 502 FORMAL EPISTEMOLOGY
Offered: Spring

PHL 516 TOPICS IN PHIL OF LANGUAGE

PHL 517 SEL TOP ETHICS

PHL 519 TOP IN MOD PHIL: LEIBNIZ

PHL 521 ANCIENT PHIL: ARISTOTLE
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<td>PHL 522</td>
<td>PLATO SEMINAR</td>
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<td>PHL 542</td>
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<td>PHL 560</td>
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<td>PHL 895</td>
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<td>MASTER'S DISSERTATION</td>
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<td>PHL 985</td>
<td>LEAVE OF ABSENCE</td>
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<td>PHL 986V</td>
<td>FULL TIME VISITING STUDENT</td>
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<td>PHL 995</td>
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<td>PHL 999A</td>
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Offered: Fall Spring

**PHY 100 THE NATURE OF THE PHYSICAL WORLD**
This is an introductory course designed especially for students in the humanities and other non-scientific fields who are interested in learning something about the physical world. Topics include the scale of the universe from galaxies to atoms and quarks; the fundamental forces of nature, motion and relativity, energy, electromagnetism and its everyday applications, the structure of matter, atoms, light and quantum mechanics. There are no prerequisites, no background knowledge is required and the material will be presented with very little mathematics. Substantial use will be made of demonstrations.

Offered: Fall Spring

**PHY 101 INTRO MTH METHODS SCI & ENGR**
A review of basic problem-solving techniques in pre-calculus mathematics -- algebra, geometry, trigonometry -- in the forms usually found in the equations of science and engineering. Prerequisite for PHY 121 and PHY 121P. Credit can be gained by passing the Basic Math Assessment Exam, offered in the first week of the semester. (1 credit, Fall semester, P/F only).

Offered: Fall

**PHY 102 VISIONS OF THE MULTIVERSE**
This is an introductory course designed especially for students in the humanities and other non-scientific fields who are interested in learning about science, physics and concepts (esp. scientific concepts) of a multiple universe reality. Topics include the nature of science, Newton's laws, relativity, light, quantum mechanics, the nature of particles and forces, and cosmology. In the course of surveying the modern scientific view of the universe, a number of serious concepts of a multiverse reality will be examined, including the many-worlds view of quantum mechanics, and fractal and cyclical cosmologies. There are no prerequisites, no background knowledge is required and the material will be presented with very little mathematics. Substantial use will be made of demonstrations. This course is intended to be equivalent to our Physics 100 course in terms of satisfying cluster requirements.

Offered: Spring

**PHY 103 PHYSICS OF MUSIC**
A study of the physical basis of musical phenomena with a focus on demonstration and experimentation. Theories of musical instruments acoustics, spectral analysis, room acoustics, and special topics selected by the class and instructor. One lecture and one lab per week. Time in lab at the end of the semester is devoted to individual student projects, often involving construction and analysis of student instruments. The course is open to any student with a strong interest in both science and music.

Offered: Fall

**PHY 104 UNCERTAINTY & CHANCE IN PHY**

**PHY 109 QUANTUM WORLD**
This is an introductory course for non-physics major students who want to learn some basic principles of quantum mechanics. We plan to approach these concepts by relating them to human experience in everyday life. The course is designed with a lot of demonstrations, in many of which the students play a role of either quantum objects or the observers. The course is conceptual and the use of mathematics is limited to bare minimum. We plan to cover: - Properties of waves - Double-slit diffraction experiment - Particle in a box and quantization of states - Heisenberg’s uncertainty principle - Pauli principle and how to build an atom - The birth of new particles and the birth of the universe

Offered: Fall

**PHY 113 GENERAL PHYSICS I-B**
First semester of a two-course sequence suitable for students in the life sciences. Newtonian particle mechanics, including Newton's laws and there applications to straight-line and circular motions, energy; linear momentum, angular momentum; and harmonic motion; Kepler's laws; planetary and satellite motions. Calculus used as needed. In addition to Two 75-minute lectures, One three-hour laboratory every other week and one work/shop/recitation per week is required. Laboratory and workshop registration is done at the time of the course registration. This course is offered in both the Fall, Summer Session I (A-6).

Offered: Fall Summer

**PHY 114 GENERAL PHYSICS II**
Second course of a two-semester sequence suitable for students in the life science. Electricity and magnetism, and optics, electromagnetic waves; modern physics (introduction to relativity, quantum physics, etc.). In addition to the Two 75-minute lectures each week, One workshop/recitation each week and One approximately three-hour laboratory every other week is required. Laboratory and workshop registration is done at the time of the course registration. This course is offered in both the Spring, Summer Session II (B-6).

Offered: Spring Summer

**PHY 121 MECHANICS**

Course will make extensive use of geometry, algebra and trigonometry and simple integration and differentiation. Prior knowledge of introductory calculus (simple integration and differentiation) is required. Motion in one and two dimensions; Newton's laws; work and energy; conservation of energy; systems of particles; rotations; oscillations; gravity; thermodynamics. In addition to Two 75-minute lectures each week, One workshop each week and One three-hour laboratory every other week is required. Laboratory and workshop registration is done at the same time as the course registration. This course is offered in Spring and Summer session (A-6).

Offered: Spring Summer

**PHY 121P MECHANICS MASTERY/SELF-PACED**

Course will make extensive use of geometry, algebra and trigonometry and simple integration and differentiation. Prior knowledge of introductory calculus (simple integration and differentiation) is required. Motion in one and two dimensions; Newton's laws; work and energy; conservation of energy; systems of particles; rotations; oscillations; gravity; thermodynamics. Lectures are video-taped and accessed through Blackboard. Laboratory registration is done at the same time as the course registration.

Offered: Spring

**PHY 122 ELECTRICITY & MAGNETISM**

Second semester of a three-course sequence for students planning to major in physics, other physical sciences and engineering. Coulomb's Law through Maxwell's equations; electrostatics, electrical potential; capacitors; electric fields in matter; current and circuits; magnetostatics; magnetic fields in matter; induction, A.C. circuits; electromagnetic waves. In addition to Two 75-minutes lectures each week, One workshop each week and One three-hour laboratory every other week is required. The Laboratories and workshop registration is at the time of the course registration. Offered Spring, Summer Session II (B-6).

Offered: Fall Summer

**PHY 122A ELECTRICITY & MAGNETISM MWF**

Second semester of a three-course sequence for students planning to major in physics, other physical sciences and engineering. Coulomb's Law through Maxwell's equations; electrostatics, electrical potential; capacitors; electric fields in matter; current and circuits; magnetostatics; magnetic fields in matter; induction, A.C. circuits; electromagnetic waves. Offered during fall semester as two 75-minutes lectures each week, one workshop each week and one three-hour laboratory every other week. The Laboratories and workshop registration is at the time of the course registration. Common exam scheduled course. Summer Session II (B-6) is offered as PHY122. (M-R, 9:00-11:15).

**PHY 122B ELECTRICITY & MAGNETISM TR**

Second semester of a three-course sequence for students planning to major in physics, other physical sciences and engineering. Coulomb's Law through Maxwell's equations; electrostatics, electrical potential; capacitors; electric fields in matter; current and circuits; magnetostatics; magnetic fields in matter; induction, A.C. circuits; electromagnetic waves. Offered during fall semester as two 75-minutes lectures each week, one workshop each week and one three-hour laboratory every other week. The Laboratories and workshop registration is at the time of the course registration. Common exam scheduled course. Summer Session II (B-6) is offered as PHY122. (M-R, 9:00-11:15).

**PHY 122P ELECTRICITY&MAGN MASTERY/SELF-PACED**

Second semester of a three-course sequence for students planning to major in physics, other physical sciences and engineering. Coulomb's Law through Maxwell's equations; electrostatics, electrical potential; capacitors; electric fields in matter; current and circuits; magnetostatics; magnetic fields in matter; induction, A.C. circuits; electromagnetic waves. The lectures and demonstrations are video-taped and put on Blackboard for student access. Workshop attendance is strongly recommended.
One three-hour laboratory every other week is required. The Laboratories and workshop registration is at the time of the course registration. Offered Full.

**PHY 123 WAVES & MODERN PHYSICS**

Third semester of a three-course sequence for students planning to majoring in physics, other physical sciences and engineering. Wave motion, physical optics, special relativity, photoelectric effect, Compton effect, X-rays, wave properties of particles. Schrödinger's equation applied to a particle in a box, penetration of a barrier, the hydrogen atom, the harmonic oscillator, the uncertainty principle, Rutherford scattering, the time-dependent Schrödinger equation and radioactive transitions, many electron atoms and molecules, statistical mechanics and selected topics in solid state physics, nuclear physics and particle physics. In addition to Two 75-minutes lectures each week, One workshop each week and One three-hour laboratory every other week is required. The laboratory and recitation registration is at the same time as the course registration. Offered in the Spring.

Offered: Spring Summer

**PHY 141 MECHANICS (HONORS)**

First semester of a three-course honors sequence, recommended for prospective departmental concentrators and other science or engineering students with interest in physics and mathematics. Topics studied are similar to those in PHY 121, but are covered in greater depth. These include symmetries, vectors, coordinate and velocity transformations, motion in one and two dimensions, Newton's Laws, work and energy, conservation of energy and momentum, special relativity, systems of particles, gravity and Kepler's laws, rotations, oscillations, molecular theory and thermodynamics. In addition to Two 75-minute lectures each week, One recitation each week and One three-hour laboratory every other week is required. The laboratory and recitation registration is at the same time as the course registration.

Offered: Fall

**PHY 142 ELECTRICITY & MAGNETISM (HONORS)**

Third semester of a three-course honors sequence (PHY 141, 143, 142), recommended for prospective departmental concentrators and other science or engineering students with a strong interest in physics and mathematics. Topics are the same as those of PHY 122 but in greater depth. These topics include Coulomb's Law through Maxwell's equations; electrostatics, electrical potential; capacitors; electric fields in matter; current and circuits; magnetostatics; magnet fields in matter; induction; A.C. circuits; waves. In addition to Two 75-minute lectures each week, One workshop each week and One three-hour laboratory every other week is required. The laboratories and workshop registration is at the same time as the course registration.

Offered: Fall

**PHY 143 WAVES AND MODERN PHYSICS (HONORS)**

Second semester of a three-course honors sequence, recommended for prospective departmental concentrators and other science or engineering students with a strong interest in physics or mathematics. Topics are the same as PHY 123 but in greater depth. Introductory examinations of Bohr’s atomic model; Broglie waves; momentum and energy quantization; Heisenberg’s uncertainty relation; Schrödinger’s cat; electron spin; photon interference; and Bell’s inequalities; selected applications to solid-state, nuclear, particle, and astrophysics. In addition to Two 75-minute lectures each week, One workshop each week and One three-hour laboratory every other week is required. The laboratories and workshop registration is at the same time as the course registration.

Offered: Spring

**PHY 181 MECHANICS LABORATORY**

Laboratories experiments in Mechanics: statistics and measurement; acceleration of gravity; conservation of energy and momentum; moment of inertia and oscillations; and mechanical equivalent of heat. This Laboratory uses the P/F University grading system.

Offered: Fall Spring

**PHY 182 ELECTROMAGNETISM LAB**

Laboratory experiments in electricity and magnetism: Coulomb's Law; electric fields; measurement of the absolute voltage and capacitance, electricity and magnetism of the electron; superconductivity; and electric circuits. This Laboratory uses the P/F University grading system.

Offered: Fall
**PHY 183 MODERN PHYSICS LAB**
Laboratory experiments in modern physics: velocity of sound; geometrical optics and imaging; the wave nature of light and microwaves; the spectrum of atomic hydrogen; and the Frank Hertz experiment. This Laboratory uses the P/F University grading system.
Offered: Spring Summer

**PHY 184 EXPERIMENTS IN ELECTRICITY, MAGNETISM AND MODERN PHYSICS**
Laboratory experiments in electricity, magnetism, and modern physics: Coulomb's Law; electric fields; electricity and magnetism ratio of the electron, superconductivity; electric circuits; geometrical optics and imaging; the wave nature of light; and the spectrum of atomic hydrogen. This Laboratory uses the P/F University grading system.
Offered: Spring

**PHY 217 ELECTRICITY & MAGNETISM I**
Review of vector calculus; electrostatic field and potential; boundary value problems solved with orthogonal functions; the multiple expansion and dielectrics; the magnetic field and vector potential.
Offered: Fall

**PHY 218 ELECTRICITY & MAGNETISM II**
Electromagnetic induction; displacement current; Maxwell's equations; the wave equation; plane electromagnetic waves; Poynting vector; reflection and refraction; radiation; waveguides; transmission lines; propagation of light; radiation by charged particles; relativistic formulation of Maxwell's equations.
Offered: Spring

**PHY 227 THERMODYNAMICS & STATISTICAL MECHANICS**
Multiplicity of physical states, equilibrium entropy and temperature, Boltzmann factor and partition function, statistical approach to free energy, chemical potential, distribution functions for ideal classical and quantum gases. Applications to chemical reactions, thermal engines, equations of state and phase transitions, applications.
Offered: Spring

**PHY 235W CLASSICAL MECHANICS I**
Mathematical introduction; review of elementary mechanics; central force problems; conservation theorems and applications; Fourier and Green's functions; variational calculus and Lagrangian multipliers; Lagrangian and Hamiltonian formulation of mechanics is introduced and applied; oscillations; normal mode theory; rigid body dynamics. The course is designed to satisfy part of the upper-level writing requirement.
Offered: Fall

**PHY 237 QUANTUM MECHANICS OF PHYSICAL SYSTEMS**
Introduction to quantum mechanics with emphasis on applications to physical systems. Includes Schroedinger theory; solutions to the one-dimentional Schroedinger equation; the hydrogen atom; and selected applications from atomic and molecular physics; quantum statistics; lasers; solids; nuclei; and elementary particles.
Offered: Spring

**PHY 243W ADVANCED EXPERIMENTAL TECHNIQUES I**
Students work in pairs and each team is expected to perform three or four experiments from a variety of available setups such as Berry's phase with light, Universal chaos, lifetime of cosmic ray muons, optical pumping, electron diffraction's, etc. This is a hands-on laboratory with most experiments under computer control. This course can be used towards satisfying part of the upper-level writing requirement.
Offered: Fall

**PHY 244W ADVANCED EXPERIMENTAL TECHNIQUES II**
A continuation of PHY 243W with greater emphasis on independent research and construction of more complicated instrumentation. This course can be used to satisfy part of the upper-level writing requirement.
**PHY 245W** THE ADVANCED NUCLEAR SCIENCE EDUCATION LABORATORY

The students enrolled in ANSEL will develop a sophisticated understanding of our terrestrial radiation environment and of some of the important applications of nuclear science and technology. They will acquire practical skills in the routine use of radiation detectors, monitors, and electronics, and develop the ability to assess radiation threats and prospects of their abatement. The four in-depth ANSEL experiments are designed to help recreate a type of well-rounded, competent experimental nuclear scientist who is able to analyze an experimental problem, to select, design, and set up appropriate nuclear instrumentation, and to conduct required measurements. The laboratory sessions will meet twice a week for 2 hours and 40 minutes. The students are expected to write detailed lab reports on their work, and give a presentation on their experiments at the end of the semester. In addition to the laboratory component of ANSEL students will attend a weekly lecture (1 hour and 15 minutes per week).

Offered: Spring

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**PHY 246** QUANTUM THEORY

Formalism of quantum theory with more advanced applications than PHY 237. Includes postulates of Quantum Mechanics; function spaces, Hermitian operators, completeness of basis sets; superposition, compatible observables, conservation theorems; operations in abstract vector space, spin and angular momentum matrices; addition of angular momentum; perturbation theory, and simple scattering theory.

Offered: Spring

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**PHY 251** INTRODUCTION TO CONDENSED MATTER PHYSICS

An emphasis on the wide variety of phenomena that form the basis for modern solid state devices. Topics include crystals; lattice vibrations; quantum mechanics of electrons in solids; energy band structure; semiconductors; superconductors; dielectrics; and magnets. (same as MSC 420, ECE224, ECE424, PHY420).

Offered: Spring

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**PHY 252** BIOMEDICAL ULTRASOUND

This course provides analyses of the physical bases for the use of high-frequency sound in medicine (diagnosis, therapy, and surgery) and biology. Topics include acoustic interactions of ultrasound with gas bodies (acoustic cavitation and contrast agents), thermal and nonthermal biological effects of ultrasound, ultrasonography, dosimetry, hyperthermia, and lithotripsy.

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**PHY 253** BIOLOGICAL PHYSICS

The course is designed for students of physical science or engineering background who are interested in biological and medical physics. Topics include fundamentals of biological physics, diffusive motion in biological system, thermal equilibrium and steady state, forces and energetics in biology, biochemical reaction, corporative transitions, biological membranes, neural system, and biophysical techniques. The materials are presented at the level of Nelson Biological Physics.

Offered: Fall Spring

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**PHY 254** NUCLEAR AND PARTICLE PHYSICS

This course is designed for physics majors interested in nuclear and particle physics. The course describes the properties of nuclei and various models used to describe nuclear matter, including the liquid drop model, shell model, collective model, radioactivity, fission, and fusion. Properties of particle interactions with matter are covered and used to describe the principles of detections used in nuclear and particle experiments. In addition, the principle of operation of various existing accelerators is discussed. Finally, the fundamental interactions of elementary particles and their constituents are reviewed, with emphasis on issues pertaining to the conservation of quantum numbers and symmetries observed in high-energy collisions. (cross-listed with PHY 440).

Offered: Fall

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**PHY 255** INTRODUCTION TO FLUID DYNAMICS

Fluid properties; fluid statics; kinematics of moving fluids; the Bernoulli equation and applications; control volume analysis; differential analysis of fluid flow; inviscid flow, plane potential flow; viscous flow, the Navier-Stokes equation; dimensional analysis, similitude; empirical analysis of pipe flows; flow over immersed bodies, boundaries layers, lift and drag. (cross-listed with ME225).

Offered: Fall
PHY 256 COMPUTATIONAL PHYSICS
Introduction of numerical and computational methods, with special emphasis on their utilities and applications in contemporary physics topics: Intro to programming language, numerical considerations, ordinary differential equations I & II, partial differential equations I & II, analysis of data, random numbers and evaluation, growth and fractal, Monte Carlo method.
Offered: Fall

PHY 257 ULTRASOUND IMAGING
Introduction to the principles and implementation of diagnostic ultrasound imaging. Topics include linear wave propagation and reflection, fields from pistons and arrays, beamfoaming, B-mode image formation, Doppler, and elastography. Project and final project. (Crosslisting PHY 467, BME 253/453, ECE 251/451)
Offered: Fall

PHY 258 ENERGY SCIENCE TECH SCTY
Interdisciplinary course on contemporary energy science, technology and policy issues, part of a sustainability minor. Historical development, present state and projected demands of US- American energy production and distribution within the boundary conditions of climate change and global competition. Provides scientific-technological knowledge of energy production and distribution technologies, energy efficiency, assessment of environmental and biological risks. Present energy policies and prospects for sustainable energy strategies. Student research projects use published data and simulated model energy scenarios. (Not open to freshman).
Offered: Spring

PHY 261 INTERFERENCE AND DIFFRACTION
Complex representation of waves; propagation of waves, diffraction; scalar diffraction theory; Fresnel and Fraunhofer diffraction and application to measurement; partially coherent light; diffraction and image formation; optical transfer function; coherent optical systems, optical data processing, and holography (same as OPT 261).

PHY 262 ELECTROMAGNETIC THEORY
Continuation of PHY 261. Vector analysis; microscopic and macroscopic forms of Maxwell's equations; energy flow in electromagnetic fields; dipole radiation from Lorentz atoms; partially polarized radiation; spectral linebroadening; dispersion; reflection and transmission; crystal optics; electro-optics; introduction to quantum optics (same as OPT 262).

PHY 264 LASER SYSTEMS
Fundamentals and applications of lasers and laser systems, including optical amplification, cavity design, beam propagation and modulation. Emphasis is placed on developing the basic principles needed to design new systems, as well as an understanding of the operation of those currently in use. Cross-listed OPT 224.
Offered: Fall

PHY 276 BIOMEDICAL OPTICS
Major Topics are biomedical spectroscopy (absorption, fluorescence, Raman, elastic scattering); propagation of photons in high scattering media (such as tissue); techniques for high-resolution imaging in biological media: confocal imaging, multiphoton imaging, and optical coherence tomography. (Cross-listed OPT 476).
Offered: Fall

PHY 371 NANOMETROLOGY LABORATORY
This is a required, 4-credit-hour course for the Certificate in Nanoengineering Program. It consists of three laboratory experimental modules accompanied by lecture materials: Module 1. Scanning electron microscopy (McIntyre); Module 2. Atomic force microscopy (Papernov); Module 3. Confocal microscopy (Lukishova). The laboratory components will use the facilities of the University of Rochester Integrated Nanosystems Center, the Institute of Optics and the Laboratory for Laser Energetics. Topics covered in the 50-min lab lectures include the nature of nanoscale surface forces in solids and principles of scanning force microscopy, function and capabilities of the scanning electron microscope, and confocal fluorescence microscopy of single nanomitters. Students are expected to have completed a sequence in introductory physics with a strong performance in electromagnetism, the basics of modern physics and physical optics. Junior and Senior level.
Offered: Spring
**PHY 373 PHYSICS AND FINANCE**

Introduction to econophysics and the application of statistical physics models to financial markets. Parallels between physical and financial phenomena will be emphasized. Topics will include random walks and Brownian motion, introduction to financial markets and efficient market theory, asset pricing and the Black-Scholes equation for pricing options. The course will also explore non-Gaussian Levy processes and the applicability of power law distributions and scaling to finance. Other possible topics include turbulence and critical phenomena in connection with market crashes. Cross listed as PHY373/573.

Offered: Spring

**PHY 382A PARTICLE PHYSICS II**

This course is the same as PHY 582 offered the first six weeks of the semester. Topics covered are: Electroweak theory, and experimental evidence in support of it. Gauge theories and spontaneous symmetry breaking. QCD and color SU(3). Grand unification and recent advances. Particles and cosmology. (Cross-listed with PHY582)

Offered: Spring

**PHY 385 TEACHING & RESEARCH SEMINAR**

Fall) - Noncredit course given once per week, required of all Teaching Interns and first-year graduate students. The seminar consists of lectures and discussions on various aspects of being an effective teaching assistant, including cross-cultural issues. (Spring) - Noncredit course given once per week required for Teaching Interns (undergraduates) when topics of being an effective teaching assistant, including mid-semester evaluation. Optional attendance when members of the faculty discuss topics in their current area of research interest. (cross-listed with PHY 597).

Offered: Fall Winter

**PHY 386 TEACHING INTERNSHIP I, PEDAGOGY TRAINING**

This course is designed for an undergraduate to be a Workshop Leader Teaching Intern (TI) and can be taken by a Laboratory or Recitation Teaching Intern (TI), who plans to use this experience to fulfill part of the requirements for the Citation for achievement in College Leadership. Typically, the TI attends the weekly Workshop Leader Training meeting that offers specialized support and training in group dynamics, learning theory, and science pedagogy for students facilitating collaborative learning groups for science and social science courses. The TI teaches one workshop, laboratory, or recitation in the fall semester introductory physics courses: PHY 113, PHY 122, PHY 141 or PHY 142, and AST 111. Additional requirements are: Attendance of the weekly content meetings with supervising professor, giving feedback to other leaders in a constructive evaluation process and a project designed in concert with the supervising professor and the PHY 386 instructor. (Course is similar to CAS 352).

Offered: Fall

**PHY 387 TEACHING INTERNSHIP II, PEDAGOGY & GROUP LEADERSHIP**

This course is designed as the second follow-up course for an experienced Workshop Leader, Laboratory or Recitation Teaching Intern who plans to use this experience to fulfill part of the requirements for the Citation for achievement in College Leadership. The TI is expected to attend the weekly Leader Training meeting which offers specialized support and feedback, as well as training/seminars to develop leadership skills, foster ongoing communication among faculty members and TIs, and to provide an environment for review of study group related issues. Students spend the semester teaching one workshop, lab or recitation section during the Spring semester intro physics courses: PHY 114, PHY 121, PHY 123, PHY143 and AST 142. Additional requirements are: Weekly content meetings with supervising professor, giving feedback to other leaders in a constructive evaluation process and a project designed in concert with the supervising professor and the PHY 387 instructor. (similar to CAS 355). Students

Offered: Fall

**PHY 388 TEACHING INTERNSHIP I**

The student typically spends one or two semesters teaching an introductory physics laboratory section, working with a graduate TA. Faculty supervision is augmented by training, ongoing teaching seminars, and a constructive evaluation process. Student must formally apply by contacting Janet Fogg at 5-6679.

**PHY 389 TEACHING INTERNSHIP II**
The student typically spends one or two semesters teaching an introductory physics laboratory section, working with a graduate TA. Faculty supervision is augmented by training, ongoing teaching seminars, and a constructive evaluation process. Student must formally apply by contacting Janet Fogg at 5-6679.

**PHY 390** SUPERVISED TEACHING
Introduction to the techniques of physics instruction, active observation, and participation in the teaching of an undergraduate course under the guidance of a faculty member. (Same as AST 390).

**PHY 390A** SUPERVISED TEACHING WITH LEADERSHIP FOCUS
This course is designed for an experienced undergraduate planning to be a Workshop Leader, Laboratory or Recitation Teaching Intern (TI), and who is planning to use this experience to fulfill part of the requirements for the Citation for achievement in College Leadership. The TI is expected to attend the weekly Leader Training meetings supporting PHY 386-387. In recognition of their experience, the TI will take on some mentoring and course organizational tasks. Students spend the semester teaching one workshop, laboratory or recitation section during the Fall/Spring semester introductory physics courses: PHY113, PHY114, PHY121, PHY122, PHY123, PHY141, PHY142, PHY143, AST111 & AST142. Additional requirements are: Weekly content meetings with supervising professor and giving feedback to other leaders in a constructive evaluation process. An additional project is required which may or may not coincide with the mentoring and course organizational tasks mentioned above. This course may be taken more than once.

**PHY 391** INDEPENDENT STUDY
Independent study project under the direction of a faculty member of the Department of Physics and Astronomy.
Offered: Fall Spring Summer

**PHY 391W** INDEPENDENT STUDY
Normally open to seniors concentrating in physics. This course may be used to satisfy part of the upper level writing requirement.
Offered: Fall Spring Summer

**PHY 393** SENIOR PROJECT
Completion of an independent research project under the direction of a faculty member of the Department of Physics and Astronomy.
Offered: Fall Spring Summer

**PHY 393W** SENIOR PROJECT
Completion of an independent research project under the direction of a faculty member of the Department of Physics and Astronomy. This course includes a writing component and can be used to satisfy part of the upper-level writing requirement.
Offered: Fall Spring Summer

**PHY 395** SPECIAL TOPICS
Independent research project under the direction of a faculty member of the Department of Physics and Astronomy.

**PHY 395W** RESEARCH IN PHYSICS
Independent research project under the direction of a faculty member of the Department of Physics and Astronomy. This course includes a writing component and can be used to satisfy part of the upper-level writing requirement.
Offered: Fall Spring Summer

**PHY 401** MATHEMATICAL METHODS OF OPTICS & PHYSICS
Study of mathematical techniques such as contour integration, transform theory, Fourier transforms, asymptotic expansions, and Green's functions, as applied to differential, difference, and integral equations. (Prior Titles: Complex Analysis and Diff Equations & Mathematical Methods of Theoretical Optics). (Cross-listed with OPT411).
Offered: Fall

**PHY 402** PROBABILITY
Arts Sciences and Engineering Courses


**PHY 403 DATA SCIENCE I: MODERN STATISTICS & EXPLORATION OF LARGE DATA SETS**
Review the fundamentals of probability and statistics and learn to apply them in commonly encountered practical data analysis problems, including parameter estimation, hypothesis testing, regression, simulation, and advanced error analysis (both statistical and systematic). This course will have theoretical and practical components. Once the theoretical concepts are covered, the emphasis will be to apply them to actual calculations with data. Students will learn to use a software package employed in the manipulation and analysis of large data sets, and they will write their own computer programs to carry out calculations using supplied data sets.

**PHY 404 LINEAR SPACES**

**PHY 405 GEOMETRICAL METHODS OF PHYSICS**
Offered: Fall

**PHY 407 QUANTUM MECHANICS I**
Offered: Fall

**PHY 408 QUANTUM MECHANICS II**
Symmetries including parity, lattice translations, and time reversal. Stationary-state and time-dependent perturbation theory, Stark and Zeeman effects, fine structure, transition probabilities. Scattering theory with applications. Elementary QED, multipole and plane-wave expansions, properties of the photon. The Dirac equation and elementary mass renormalization.
Offered: Spring

**PHY 411 MECHANICS & CHAOTIC DYNAMICS**
Lagrangian and Hamiltonian dynamics, canonical transformations, Hamilton-Jacobi equations, chaotic dynamics, periodic orbits, Stable and unstable orbits, Julia and Fatou sets, Convergence of Newton's Iteration, KAM theory. (Offered the first 8 weeks as 311A).
Offered: Fall

**PHY 413 GRAVITATION**
Motivation for a metric theory of gravity, principle of equivalence, principle of general covariance, mathematical tools, curvature tensor, Einstein field equations and solutions, energy momentum tensor, weak field approximation. Applications and optional topics include experimental tests; black holes; relativistic star models; cosmological models; early stages of evolution of the universe; gravitational waves.
Offered: Fall

**PHY 415 ELECTROMAGNETIC THEORY I**
Offered: Fall

**PHY 418 STATISTICAL MECHANICS**
Review of thermodynamics; general principles of statistical mechanics; micro-canonical, canonical, and grand canonical ensembles; ideal quantum gases; applications to magnetic phenomena, heat capacities, black-body radiation; introduction to phase transitions. (Cross-listed with MSC418).
Offered: Spring
**PHY 420** INTRODUCTION TO CONDENSED MATTER PHYSICS
An emphasis on the wide variety of phenomena that form the basis for modern solid state devices. Topics include crystals; lattice vibrations; quantum mechanics of electrons in solids; energy band structure; semiconductors; superconductors; dielectrics; and magnets.

**PHY 434** QUANTUM & NANO OPT LAB
This advanced optics teaching laboratory course will expose students to cutting-edge photon counting instrumentation and methods with applications ranging from quantum information to biotechnology and medicine. It will be based on quantum information, the new, exciting application of photon counting instrumentation. As much as wireless communication has impacted daily life already, the abstract theory of quantum mechanics promises solutions to a series of problems with similar impact on the twenty-first century. Major topics will be entanglement and Bells inequalities, single-photon interference, single-emitter confocal fluorescence microscopy, Hanbury Brown and Twiss correlations/photon antibunching. Photonic based quantum computing and quantum cryptography will be outlined in the course manuals as possible applications of these concepts and tools. The full course will consist of four laboratory experiments and a special final meeting of students oral presentations.
Offered: Fall

**PHY 435** PRINCIPLES OF LASERS
Topics include quantum mechanical treatments to two-level atomic systems, optical gain, homogeneous and inhomogeneous broadening, laser resonators, cavity design, pumping schemes, rate equations, Q-switching for various lasers.

**PHY 437** NON-LINEAR OPTICS
Fundamentals and applications of optical systems based on the nonlinear interaction of light with matter. Topics to be treated include mechanisms of optical nonlinearity, second-harmonic and sum and difference-frequency generation, photonics and optical logic, optical self-action effects including self-focusing and optical soliton formatin, optical phase conjugation, stimulated Brillouin and stimulated Raman scattering, and selection criteria of nonlinear optical materials. (Cross-listed OPT 467).
Offered: Spring

**PHY 440** NUCLEAR AND PARTICLE PHYSICS
This course is designed for physics majors interested in the development of nuclear and particle physics. The course describes the properties of nuclei and various models useful for the description of nuclear properties. The models and ideas include the liquid drop model, shell model, collective model, radioactivity, fission, and fusion. Properties of particle interactions with matter are covered, and used to develop principles of detections used in nuclear and particle experiments. The physical ideas behind various existing accelerators are discussed. Finally, the fundamental interactions of elementary particles and their constituents are reviewed, with emphasis on issues pertaining to the conservation of quantum numbers and symmetries observed in the high-energy collisions. (Cross-listed with PHY 254).
Offered: Fall

**PHY 445** ADVANCED NUCLEAR SCIENCE EDUCATION LABORATORY
The students enrolled in ANSEL will develop a sophisticated understanding of our terrestrial radiation environment and of some of the important applications of nuclear science and technology. They will acquire practical skills in the routine use of radiation detectors, monitors, and electronics, and develop the ability to assess radiation threats and prospects of their abatement. The four in-depth ANSEL experiments are designed to help recreate a type of well-rounded, competent experimental nuclear scientist who is able to analyze an experimental problem, to select, design, and set up appropriate nuclear instrumentation, and to conduct required measurements. The laboratory sessions will meet twice a week for 2 hours and 40 minutes. The students are expected to write detailed lab reports on their work, and give a presentation on their experiments at the end of the semester. In addition to the laboratory component of ANSEL students will attend a weekly lecture (1 hour and 15 minutes per week).
Offered: Spring

**PHY 454** INTRODUCTION TO PLASMA PHYSICS
Orbit theory, adiabatic invariants, collective effects, two-fluid and MHD equations, waves in plasma, transport across magnetic fields and in velocity space. (same as ME 434). (Course was listed as PHY 426).
Offered: Fall
PHY 455 INTRODUCTION TO PLASMA PHYSICS II
Vlasov equation, Landau damping, VanKampen modes, two-stream instability, micro-instabilities, introduction to kinetic theory, shield clouds, Thomson scattering, and the Fokker-Planck equation.

PHY 457 INCOMPRESSIBLE FLOW
Kinematics, the Navier-Stokes equation, the stream function, vorticity dynamics, laminar viscous flows, slow viscous flow, boundary layers, inviscid irrotational flow.

PHY 458 GEOMETRIC METHODS IN FLUIDS
This course will focus on applying methods of Riemannian geometry to fluid mechanics. At an elementary level, it involves using curvilinear co-ordinates to solve Euler and Navier-Stokes equations in various geometries; e.g., rotating and self-gravitating fluids. At a deeper level, the Euler equations are the geodesic equations in the infinite dimensional group of volume preserving diffeomorphisms. We can understand the instabilities of a fluid in terms of the sectional curvature of this space (the work of Arnold). Flow along the principal directions of this metric relates this back to “force-free” flows in fluid mechanics. Self-gravitating fluids of interest in astrophysics, relativistic fluids of nuclear physics, fluids near a critical point and quantum fluids such as Bose condensates will also be studied this way.

PHY 462 MEDICAL IMAGING THEORY & IMPLEMENTATION
Physics and implementation of X-ray, ultrasonic, and MR imaging systems. Special attention is given to the Fourier transform relations, reconstruction algorithms of X-ray and ultrasonic-computed tomography, and MRI.

PHY 464 BIOLOGICAL PHYSICS
Physical aspects of special topics in biology. The purpose of this course is to survey several important areas of biological and medical physics. Topics covered include properties of biological membranes, transport and signaling in cells and tissue, photosynthesis, magnetic resonance imaging, and physical methods in biology such as nuclear magnetic resonance, x-ray diffraction, and optical absorption and fluorescence spectroscopies. The material is presented at the level of Russeu K. Hobbie’s, Intermediate Physics for Medicine and Biology. (Cross listed with PHY 253).

PHY 467 ULTRASOUND IMAGING
Introduction to the principles and implementation of diagnostic ultrasound imaging. Topics include linear wave propagation and reflection, fields from pistons and arrays, beamfoaming, B-mode image formation, Doppler, and elastography. Project and final report. (Crosslisting PHY 257, BME 253/453, ECE 251/451).
Offered: Fall

PHY 490 SPECIAL TOPICS

PHY 491 MASTER’S READINGS IN PHYSICS
Special study or work, arranged individually for master’s candidates.

PHY 492 CERTIFICATE IN TEACHING OF COLLEGE PHYSICS OR PHYSICS AND ASTRONOMY
After serving as a lead Teaching Assistant (TA), the student teaches a course during the University’s summer session. Students successfully completing the Graduate Teaching program are awarded a Certificate of College Teaching in Physics and Astronomy to be presented during the graduation ceremony in May. Please visit department website for more information
Offered: Summer

PHY 495 MASTER’S RESEARCH IN PHYSICS

PHY 498 SUPERVISED TEACHING ASSISTANT I
This course is designed for a student to be Laboratory or Recitation Teaching Assistant (TA). Typically, the student spends the semester teaching two laboratories or up to four recitations during the Fall semester for the introductory physics courses: PHY 113, PHY 122, PHY 141, PHY 142, or introductory astronomy course: AST 111, or teaching one or more recitation(s): AST 111, PHY 113, PHY 122, PHY 141, PHY 142, or a 200 level undergraduate physics or astronomy course. Attendance of the
weekly teaching seminars PHY 597-Fall, giving feedback to other leaders, and a constructive evaluation process are required. This course is non-credit and may be taken more than once.

Offered: Fall

**PHY 499 SUPERVISED TEACHING ASST II**
Continuation of PHY 498.

**PHY 501 ADV MATH METHODS IN OPTICS**

**PHY 512 RENORMALIZATION**
Background and introduction to renormalization, one loop divergences in perturbation theory, and Callan Symanzik equation. The Renormalization group and Wilson's point of view, effective actions, and operator product expansion.

Offered: Spring

**PHY 513 MAGNETIC RESONANCE IMAGING: FROM SPINS TO BRAINS**
Magnetic Resonance Imaging: From Spins to Brains. See BCS 513.

**PHY 519 Statistical Mechanics II**
A continuation of PHY 418, involving the theory of imperfect gases, phase transition, and Brownian motion.

**PHY 521 CONDENSED MATTER I**
Classification of solids by crystal lattice, electronic band structure, phonons, and optical properties; X-ray diffraction, neutron scattering, and electron screening. (same as MSC 550, also offered first 8 weeks as P321A).

Offered: Fall

**PHY 522 CONDENSED MATTER PHYSICS II**
Electron-phonon interaction, transport, magnetism, and topics of current interest such as superconductivity or localization, to be determined by the instructor. (same as MSC 551).

**PHY 523 SOLID STATE QUANTUM OPTICS**
Subject matter to be selected by the instructor from among topics of current interest in solid state. (Cross-listing OPT 592).

Offered: Fall

**PHY 525 DATA SCIENCE II: COMPLEXITY AND NETWORK THEORY**
As the number of interacting degrees of freedom (or agents) in a given system increases, its behavior often changes qualitatively, and not only quantitatively. Complexity is the emerging field of research, which investigates the shared underlying concepts and principles of such systems. It finds its applications in Physics, Computer Science, Mathematics, Biology, Social Sciences, Economy, and more. In this introductory course we will focus on these common features and their utilization in understanding complex systems. They will include for example: Fractals, non-linearity and chaos, adaptation and evolution, critical and tipping points, patterns formation, networks modeling, feedback loops, emergence and unpredictability, etc. Students in the course will be given ample opportunities to study farther these systems and/or techniques that are of particular interest to them. Prerequisites include basic knowledge in differential equations, linear algebra, and probability.

Offered: Fall

**PHY 526 SPIN BASED ELECTRONICS**
One example in the research of spin-based electronics (spintronics) which is motivated by the natural ordering of ferromagnetic phase can add to large scale electronics circuits. Generally speaking, we are left to manipulate the information whereas nature takes care of preserving it. The course is intended for students who are interested in research frontiers of future electronics technologies. The course begins with introduction to the basic physics of magnetism and of quantum mechanical spin. Then it covers aspects of spin transport with emphasis on spin-diffusion in semiconductor. (crosslisted with ECE 520/MSC 520).

Offered: Spring
**PHY 531** INTRODUCTION TO QUANTUM OPTICS  
Classical and quantum mechanical theories of the interaction of light with atoms and molecules, with emphasis on near resonance effects, including coherent nonlinear atomic response theory, relaxation and saturation, laser theory, optical pulse propagation, dressed atom-radiation states, and multi-photon processes. (same as OPT 551).  
Offered: Fall

**PHY 532** QUANTUM OPTICS OF THE ELECTROMAGNETIC FIELD  
Properties of the free quantized electromagnetic field, quantum theory of coherence, squeezed states, theory of photoelectric detection, correlation measurements, atomic resonance fluorescence, cooperative effects, quantum effects in nonlinear optics.  
Offered: Spring

**PHY 533** QUANTUM OPTICS OF THE ATOM-FIELD INTERACTION  
Subject matter to be selected from topics of current interest in quantum optics. (same as OPT 553).  
Offered: Fall

**PHY 534** MECHANICAL EFFECTS IN THE ATOM-FIELD INTERACTION  
Subject matter to be selected from topics of current interest in quantum optics. (same as OPT 554).

**PHY 546** NUCLEAR SCIENCE & TECHNOLOGY II  
Experimental and theoretical studies of heavy-ion scattering and reaction mechanisms; semi-classical and quantal scattering theory; Coulomb excitation; few-nucleon transfer; damped heavy-ion reactions; fusion and fission processes; statistical approaches to complex nuclear reaction mechanisms. Cross-listed with CHM 566.  
Offered: Fall

**PHY 552** MAGNETOHYDRODYNAMICS  
Basic equations of magnetohydrodynamics (MHD). The induction equation and kinematic MHD. Magnetohydrostatic equilibria and stability. MHD waves. Behavior of magnetic flux tubes. Viscous MHD flows. Dynamo theory. Selected applications, such as electromagnetic pumps and flowmeters, sunspots, the and the solar dynamo.

**PHY 553** LASER-PLASMA INTERACTIONS  

**PHY 554** COSMOLOGY  
Introduction to cosmology, covering the following broad topics: Introduction to the universe, introduction to general relativity, cosmological models and Fridemann-Walker universe, thermodynamics of early universe, particle physics of the early universe, and the formation of large-scale structure (Same as AST 554).  
Offered: Fall

**PHY 556** HYDRODYNAMIC STABILITY & TURBULENCE  
Offered: Spring

**PHY 564** HIGH ENERGY ASTROPHYSICS  
A survey of current research topics in high energy astrophysics. Topics drawn from X-ray and gamma-ray astrophysics, supernovae and planetary nebulae, binary accretors, astrophysics of compact objects (black holes, neutron stars, white dwarfs), plasma astrophysics, magnetic field-particle interactions, cosmic rays, astrophysical jets, active galactic nuclei. (Cross-listed with AST 554).
**PHY 573 PHYSICS AND FINANCE**
Introduction to econophysics and the application of statistical physics models to financial markets. Parallels between physical and financial phenomena will be emphasized. Topics will include random walks and Brownian motion, introduction to financial markets and efficient market theory, asset pricing and the Black-Scholes equation for pricing options. The course will also explore non-Gaussian Levy processes and the applicability of power law distributions and scaling to finance. Other possible topics include turbulence and critical phenomena in connection with market crashes. Cross listed as PHY373/573.
Offered: Spring

**PHY 581 PARTICLE PHYSICS I**
Particle interactions the their symmetries. The particle spectrum and its classification. Calculation of elementary processes. The quark model. CP violation. Accelerators and experimental techniques. (Cross-listed with 381A)
Offered: Spring

**PHY 582 PARTICLE PHYSICS II**
Electroweak theory, and experimental evidence in support of it. Gauge theories and spontaneous symmetry breaking. QCD and color SU(3). Grand unification and recent advances. Particles and cosmology.
Offered: Fall

**PHY 584 SPEC TOPICS IN PARTICLE PHY**

**PHY 591 PHD READINGS IN PHYSICS**
Special study or work, arranged individually.

**PHY 593 SPECIAL TOPICS&PRTCLE PHYS**

**PHY 594 INTERNSHIP**

**PHY 595 PHD RESEARCH IN PHYSICS**

**PHY 595A PHD RESEARCH IN ABSENTIA**

**PHY 595B PHRSRCH IN ABSENTIA ABROAD**

**PHY 597 TEACHING & RESEARCH SEMINAR**
A (Fall) - Noncredit course given once per week, required of all first-year graduate students. The seminar consists of lectures and discussions on various aspects of being an effective teaching assistant, including interactions with undergraduate student body and cross-cultural issues. B (Spring) - Noncredit course given once per week required of all first-year graduate students. Members of the faculty discuss topics in their current area of research interest.
Offered: Fall Spring

**PHY 598 TEACHING WORKSHOP LEADER PEDAGOGY TRAINING**
This course is designed for a student to be a Workshop Leader Teaching Assistant (TA). Typically, the TA attends the weekly Workshop Leader Training meeting that offers specialized support and training in group dynamics, learning theory, and science pedagogy for students facilitating collaborative learning groups for science and social science courses. The TA teaches three to four workshops in one of the fall semester introductory physics courses: PHY 113, PHY 122, PHY 141 or PHY 142. Additional requirements are: Attendance of the weekly Graduate Teaching Seminars PHY 597-Fall, giving feedback to other leaders and a constructive evaluation process. This course is non-credit and may be taken more than once.

**PHY 599 PEDAGOGY & GROUP LEADERSHIP**
This course is designed as a follow-up course for an experienced Workshop Leader, titled a lead Workshop Leader Teaching Assistant (TA). Typically, the TA attends the weekly Workshop Leader Training meeting that offers specialized support and training to develop leadership skills, to foster ongoing communication among faculty members and study group leaders, and to
provide an environment for review of study group related issues. Students spend the semester teaching three to four workshops during the Spring semester introductory physics courses.

**PHY 895** CONT OF MASTER'S ENROLLMENT

**PHY 897** MASTERS DISSERTATION

**PHY 897A** MASTERS DISSERTATION ABSENTI

**PHY 899** MASTER'S DISSERTATION

**PHY 985** LEAVE OF ABSENCE

**PHY 986V** FULL TIME VISITING STUDENT

**PHY 990** SUMMER IN RESIDENCE

**PHY 995** CONT OF DOCTORAL ENROLLMENT

**PHY 997** DOCTORAL DISSERTATION

**PHY 997A** DOCT DISSERTATN IN ABSENTIA

**PHY 997B** DOC DISS IN-ABSENTIA ABROAD

**PHY 999** DOCTORAL DISSERTATION

**PHY 999A** DOCT DISSERTATN IN ABSENTIA

**PHY 999B** PHD IN-ABSENTIA ABROAD

**POL 101** ELEMENTARY POLISH I
Introduction to the basic structures of the language and the vocabulary of everyday situations. The emphasis is on spoken Polish.

**POL 102** ELEMENTARY POLISH II
Continuation of POL 101.

**POL 151** INTERMEDIATE POLISH
Designed for students with previous study of the language. A reading, writing and conversation course conducted in Polish, with emphasis on everyday use of Polish language. Systematic vocabulary building and grammar review. Reading of selected texts like newspaper articles, poetry, use of film clips and various video material.

**POL 157** POLISH IN POLAND
Offered on location in Krakow. A multi-level course designed to introduce students to the Polish language or to improve the knowledge of Polish they already possess.

**POL 175** INTRO TO HISTORY OF POLAND

**POL 201** POLISH REVIEW
The main objective of this course is to refine the participants language skills and to familiarize them with the political and cultural issues of contemporary Poland. The course will require a working knowledge of Polish language necessary to discuss the content of the source materials (e.g. articles and essays in the Polish press, recent Polish press). It will focus on group discussions based on source materials and papers prepared by it's participants.
POL 201A POLISH ART: PAST & PRESENT

POL 202 POLISH CINEMATOGRAPHY
The course “Polish Cinema” will cover the most important trends in the history of Polish cinema, including the Polish film school and cinema of moral concern. Profiles of the most outstanding directors (beginnings of Roman Polanski’s career, films of Jerzy Skolimowski, Krzysztof Kieślowski and Jan Jakub Kolski) will be discussed. Classes on contemporary Polish cinema will cover the work of Dorota Kędziorska, Wojciech Smarzowski, Przemysław Wojciechek and Małgorzata Szumowska, among others. We will also discuss Polish documentaries (the “Black Series,” “Kodziński’s school,” “Fidyk’s school”) and the financial and organizational situation of contemporary Polish cinema.

POL 224 LESSONS IN POLISH LITERATURE
Offered on location in Krakow. A presentation of some of the most interesting problems in the thousand-year history of Polish culture. Literary masterpieces of the past and present, including poetry of the two Nobel Prize winners - Czesław Miłosz (1980) and Wisła Szymborska (1996), Polish Romanticism; culture in a political context; the phenomenon of exiled culture, literature and totalitarianism, and other “great questions” of Polish culture will be discussed.

POL 390 SUPERVISED TEACHING

POL 391 INDEPENDENT STUDY

POL 394 INTERNSHIP

POR 101 ELEMENTARY PORTUGUESE I
Portuguese is the official language of approximately 240 million people in eight countries on four continents. After English and Spanish, it is the third most widely spoken European language, and the sixth most spoken language in the world. Portuguese is the official language of Brazil, the fifth most populous country in the world, the largest country in Latin America, and the fifth largest global economic power. Across Africa and Asia, Portuguese continues to be an important element of a complex cultural mosaic. Moreover, Portuguese is widely spoken outside of its officially recognized borders by over two million people across the U.S., Canada, and in other corners of the global diaspora. This course is designed for beginners who wish to master the basic structures and vocabulary of the language. Students learn the language and culture by practicing four main language skills: listening, speaking, reading and writing.

POR 102 ELEMENTARY PORTUGUESE II
Portuguese 102 is the second course of the elementary sequence. The general goal of the course is to develop basic language skills. During this course, students will: - Continue to build a vocabulary base in order to increase language skills; - Continue to use acquired vocabulary and grammatical structures; - Develop knowledge of the grammar structures associated with, but not limited to: talking about events in the present; talking about completed past events; expressing continuing events; describing daily routines and habits; - Listen to passages or conversations and discuss their content; - Read authentic texts and discuss their content; - Write paragraphs and short compositions using acquired vocabulary and grammatical structures; - Engage in and sustain face-to-face conversation with others about topics studied.

POR 151 INTERMEDIATE PORTUGUESE I
Portuguese 151 is the first Intermediate course in Portuguese. In POR 151, you will continue to expand your knowledge of Portuguese vocabulary and grammar structures while engaging in activities geared toward promoting intermediate proficiency in the language. It includes authentic texts readings and discussions, as well as writing and engage in and sustain face-to-face conversation with others about topics studied. As far as Portuguese is concerned, the terms “lecture” and “recitation” conventionally used to identify the blocks have a purely bureaucratic significance and do not reflect in any way the pedagogical approach of the course. Portuguese is the primary language of instruction.

POR 152 INTERMEDIATE PORTUGUESE II

PPC 422 PHOTOGRAPHIC PRESERVATION I

PPC 423 COLLECTIONS MANAGEMENT
**PPC 424 HISTORY OF PHOTOGRAPHY II**  
Offered: Spring

**PPC 425 PHOTOGRAPHIC PRESERVATION II**  
This course provides an overview of the history of the philosophy, ethics, concerns, standards and methods of photographic preservation.  
Offered: Spring

**PPC 491 INDEPENDENT STUDY**

**PPC 492 MASTER'S ESSAY**

**PPC 495 MASTER'S RESEARCH**

**PPC 897 MASTER'S DISSERTATION**

**PPC 899 MASTER'S DISSERTATION**

**PSC 101 INTRODUCTION TO COMPARATIVE POLITICS**  
Introduces the study of political science and comparative politics. Focuses on how citizens may be able to control public policies in different modern democracies.

**PSC 104 INTRODUCTION TO POLITICAL PHILOSOPHY**  
Most aptly called Thinking about Politics, this course aims to examine a range of contemporary issues and to explore the political and philosophical conflicts and controversies that those issues raise.

**PSC 105 INTRODUCTION TO AMERICAN POLITICS**  
Introduces students to the foundations of American government. Examines important political institutions and the linkage mechanisms that connect institutions, political actors, and ordinary American citizens.

**PSC 106 INTRODUCTION TO INTERNATIONAL RELATIONS**  
Introduces students to the wide range of issues that make up the study of international relations, including the workings of the state system, the causes of international conflict and violence, and international economic relations.

**PSC 107 INTRODUCTION TO POSITIVE POLITICAL THEORY**  
Introduces students to positive political theory, a rigorous set of tools that helps clarify key questions in political science. Studies how the rules of the game affect the decisions politicians make as well as the policy outcomes we observe.

**PSC 117 INTRO TO AMERICAN GOVERNMENT**

**PSC 150 INTRO COMPARATIVE WORLD POL**

**PSC 151 POLITICAL ECON OF DEV COUNTR**

**PSC 152 POLITICS IN DEVELOP NATIONS**

**PSC 160 CAMPAIGNS&ELECTNS:GLOBAL PER**

**PSC 161 INTRO INTERNATIONAL POLITICS**

**PSC 169 POLITICS OF NEW EUROPE**

**PSC 194 ROCHESTER POLITICS & PLACES**
Seminar discovers rich history of Rochester as well as current debates over political organization, racial and economic segregation, suburbanization, and economic change.

PSC 194W ROCHESTER POLITICS & PLACES

PSC 200 APPLIED DATA ANALYSIS
Data analysis has become a key part of many fields including politics, business, law, and public policy. This course covers the fundamentals of data analysis, giving students the necessary statistical skills to understand and critically analyze contemporary political, legal, and policy puzzles. Lectures will focus on the theory and practice of quantitative analysis and weekly lab sessions will guide students through the particulars of statistical software. No prior knowledge of statistics or data analysis is required.

PSC 201 POLITICAL INQUIRY
Introduces students to data analysis in political science. Begins by learning how to describe political data, and then to making inferences about political phenomena. No math beyond high school algebra is assumed.

PSC 202 ARGUMENT IN POLITICAL SCIENCE
Through reading and several short papers, the course introduces students to the questions, concepts, and analytical approaches of political scientists.

PSC 203 SURVEY RESEARCH METHODS
Public opinion surveys are a vital component of contemporary politics. In this course we will explore the fundamental elements of survey research: selecting a sample, designing and implementing a questionnaire, interpreting the results, and presenting the findings. This semester, we will pay special attention to surveys about current public policy issues like the environment, immigration, and health care. We will also examine polling done for the 2012 presidential election and the 2014 congressional elections. PSC 203 satisfies the Techniques of Analysis requirement for undergraduate majors and minors in political science.

PSC 204 RESEARCH DESIGN
Learn the techniques behind designing research studies that allow political scientists and economists to answer questions in systematic fashion.

PSC 208W UNDERGRADUATE RESEARCH SEMINAR
Through reading and critiquing political science research in American politics, comparative politics, and international relations, students learn how to select a research question, formulate testable hypotheses, find and evaluate relevant literature, locate or collect data that addresses a research question, analyze the data, and write a research report.

PSC 212 SUPREME COURT IN U.S. HISTORY
Constitutional law cases decided by the U.S. Supreme Court and their impact on the evolution of the Court, the balance of powers among the three governmental branches, relations between the federal government and the states, and individual express and implied rights.

PSC 213 THE U.S. CONGRESS

PSC 213W THE U.S. CONGRESS
Overview of the legislative branch of the U.S. government, including the electoral process, the nature of representation, legislative organization, the committee system, floor procedures, congressional parties, and inter-branch relations.

PSC 214 Empirical Controversies in American Politics
This seminar considers a number of controversies in American politics that can be studied with data. Topics include liberal bias in the media, the effect of capital punishment on crime, and the relationship between money and elections, among others. The course will be a small seminar and will use a discussion format. Each student will be expected to read the assigned material before class and to take turns summarizing and critiquing particular readings. Grades will be based on presentations, class discussions, and a final research paper. PSC 200 or its equivalent is a prerequisite.
PSC 214W Empirical Controversies in American Politics
This seminar considers a number of controversies in American politics that can be studied with data. Topics include liberal bias in the media, the effect of capital punishment on crime, and the relationship between money and elections, among others. The course will be a small seminar and will use a discussion format. Each student will be expected to read the assigned material before class and to take turns summarizing and critiquing particular readings. Grades will be based on presentations, class discussions, and a final research paper. PSC 200 or its equivalent is a prerequisite.

PSC 215 AMERICAN ELECTIONS
Drawing on current elections and campaigns, examines corruption, party polarization, changes in party competition, how the rules shape election outcomes (especially party nominations), the use of the internet in campaigns, and campaign techniques.

PSC 217 HOW COUNTRIES BECOME RICH
Analyzes how public opinion is formed through the media. Examines the interaction of public opinion, mass media, and political leadership.

PSC 218 EMERGENCE OF THE MODERN CONGRESS
Analyzes major issues in congressional history and legislative institutions. Examines the basic institutions of the House and Senate--committees, parties, leaders, and rules.

PSC 218W EMERGENCE OF THE MOD CONGRES

PSC 221 PHILosophical foundations of the American Revolution
Examines the philosophical foundations of the American Revolution by examining the political theory which lies behind the revolution itself and which underlies the foundations of the Constitution, while keeping an eye at the historical contexts that shaped the philosophy.

PSC 221W AMERICAN REVOLUTION

PSC 222 US PRESIDENCY
Introduces the major topics and theoretical perspectives in the study of the U.S. presidency.

PSC 222W US PRESIDENCY
See the description for PSC 222.

PSC 223 CONSTITUTIONAL STRUCTURE AND RIGHTS
Through the lens of the Constitution and Supreme Court cases, examines the structure of the American legal system (both separation of powers at the federal level and the authority of, and relationship among, states and the federal government), as well as the nature of civil rights of citizens.

PSC 226 BLACK POLITICAL LEADERSHIP
Is President Barack Obama a black leader or a leader who happens to be black? Leads to understanding where the nation's first African-American president fits in a long stream of black political thinkers, activists, and leaders.

PSC 228 RACE & ETHNIC POLITICS
Examines the key role played by race and ethnicity across various facets of American Political life.

PSC 230 PUBLIC HEALTH LAW

PSC 231W MONEY IN POLITICS
Examines the role of money in the U.S. political process, including the historical development of campaign finance law, the electoral effects of campaign spending, the effects of campaign contributions on public policy outcomes, and various reform proposals.

**PSC 232 CONTROVERSIES IN PUB POLICY**

**PSC 233 COMMUNITY DEVELOPMENT AND POLITICAL LEADERSHIP**
Focuses broadly on economic and neighborhood development policy at national, state and local levels, and more narrowly on community development dynamics in selected American cities.

**PSC 234 LAW AND POLITICS IN THE US**

**PSC 235 ORGANIZATIONAL BEHAVIOR**

**PSC 236 HEALTH CARE AND THE LAW**
Provides an introduction to the legal foundations of health care in America. Covers a broad range of legal issues in health care, including autonomy, privacy, liberty, and proprietary interests, from the perspective of the provider(s) and the patient.

**PSC 237 DOMESTIC SOCIAL POLICY**
Examines major federal policy issues, especially those affecting the poor. Also discusses normative justifications for governmental actions, limitations imposed by bureaucracy, and the decision-making process.

**PSC 237W DOMESTIC SOCIAL POLICY**
See description for PSC 237.

**PSC 238 BUSINESS AND POLITICS**
Uses the tools of political science and economics to study how corporations affect and are affected by politics. Cases will be drawn from areas such as antitrust, transportation, health care, and the environment.

**PSC 239 INTL ENVIRONMENTAL LAW**

**PSC 240 CRIMINAL PROCEDURE & CONSTITUTIONAL PRINCIPLES**
Through analysis of the Constitution and the Bill of Rights, examines criminal procedure as elaborated by federal and state court decisions. Topics include arrest procedures, search and seizure, right to counsel, and police interrogation and confessions.

**PSC 241 URBAN CHANGE AND CITY POLITICS**
Examines the politics and history of American cities. Emphasizes the ways in which ethnicity, race, and class shape battles over housing, neighborhoods, workplaces, schools, and governmental institutions.

**PSC 241W URBAN CHANGE&URBAN POLITICS**
See description for PSC 241.

**PSC 243 ENVIRONMENTAL POLITICS**
Examines environmental issues from a social scientific perspective. Topics covered: the reasons for environmental regulation, the history of environmental policy, the state of contemporary environmental policy, the role of state and local governments, the impact of environmental activists, and a comparison of domestic and international regulation of environmental affairs.

**PSC 243W ENVIRONMENTAL POLITICS**
See description for PSC 243.

**PSC 244K POL&MARKETS:INNOV&GLBL BUS**
Studies how entrepreneurship and innovation are affected by government institutions, then examines business strategy in the global business environment, focusing on the role of regulations imposed by foreign governments and international organizations.

**PSC 245 AGING AND PUBLIC POLICY**

Covers policies in such areas as Social Security, public assistance, health care, and social services for the elderly.

**PSC 245W AGING AND PUBLIC POLICY**

See description for PSC 245.

**PSC 246 ENVIRONMENTAL LAW & POLICY**

Explores women's evolving roles in American politics. Topics include: a brief historical review of women's rights; women's roles in social movements; and women in electoral politics and as elected officials.

**PSC 247 GREEN MARKETS: ENVIRONMENTAL OPPORTUNITIES AND PITFALLS**

Examines the potential for “green markets,” focusing on three drivers—social, political, and economic—that can both constrain firms and potentially condition whether issues of environment and sustainability can be exploited as a means for competitive advantage.

**PSC 247W GREENMKTS-ENVIR OPP&PITFALLS**

See description for PSC 247.

**PSC 252 ETHNIC POLITICS**

Explores the growing literature on ethnic politics in the comparative politics and international relations sub-fields.

**PSC 253 COMPARATIVE POLITICAL PARTIES**

Examines the nature of political parties and political competition across democracies in the developed and developing worlds.

**PSC 253W COMPARATIVE POLITICAL PARTIES**

See description for PSC 253.

**PSC 255 INSTITUTIONS&UNDERDEVELOPMNT**

Examines film as the dominant form of political expression under state patronage, with examples from the Soviet Union, Nazi Germany, and, after World War II, from Poland, Hungary, Czechoslovakia, and the former Yugoslavia.

**PSC 256 THEORIES OF COMPARATIVE POLITICS**

Introduces theories in the field of comparative politics. Leads to understanding how the national and international environment, the political culture, the political institutions and the choices of citizens and leaders affect political performance. Explains democratization, stability, competition, citizen influence, and policy outcomes as consequences of the environment, culture and institutions—and human choices in these contexts.

**PSC 256W THEORIES OF COMPARATIVE POL**

See description for PSC 256.

**PSC 258 DEMOCRATIC REGIMES**

Why have some countries made a successful transition to democracy, while others have not? Why are some democracies more stable than others? Course offers a survey of the leading literature in comparative politics centered on the topic of democratization.

**PSC 260 CONTEMPY AFRICAN POLITICS**
From a socio-political perspective focused on Central Europe, analyzes the most dramatic and significant turning points in the Cold War, such as the Berlin Airlift in 1949 and the Polish Solidarity strikes in 1980, as well as survey internal and external actions and reactions across nearly five decades until the implosion of the entire communist system between 1989 and 1991.

**PSC 260W** CONTEMPORARY AFRICAN POLITICS

**PSC 261** LATIN AMERICAN POLITICS
Provides an introduction to political institutions and institutional reform in contemporary Latin America. Focuses on the emergence and functioning of key political institutions in Latin America, including the presidency, the legislature, the system of electoral rules, political parties, the judiciary, and the bureaucracy.

**PSC 261W** LATIN AMERICAN POLITICS
See description for PSC 261.

**PSC 262** ELECTIONS: DEVELOP COUNTRIES
Examines the implications of economic globalization for domestic and international politics.

**PSC 262W** ELECTIONS: DEVELOP COUNTRIES
See description for PSC 262.

**PSC 263** COMPARATIVE LAW & COURTS
Examines courts from a comparative perspective, focusing on the question of judicial independence.

**PSC 263W** COMPARATIVE LAW & COURTS

**PSC 264** COMPARATIVE POLITICAL INSTITUTIONS
Examines political institutions and their implications for the behavior of political actors and their effects on social outcomes.

**PSC 264W** COMPARATIVE POLITICAL INSTITUTIONS

**PSC 265** CIVIL WAR AND THE INTERNATIONAL SYSTEM
Addresses the question of when and where civil wars occur and what their effects are domestically and internationally. Also examine role played by external actors in civil war, such as financial support to governments or insurgents, armed interventions, and peacekeeping missions.

**PSC 266** POLITICS OF THE EUROPEAN UNION
Considers the past, present, and future of European integration, focusing on explanations of conflict and cooperation.

**PSC 266W** POLITICS INDIA & PAKISTAN

**PSC 267** IDENTITY, ETHNICITY & NATIONALISM
Explores the concepts of identity, ethnicity and nationalism from a comparative perspective.

**PSC 268** INTERNATIONAL ORGANIZATION

**PSC 268W** INTERNATIONAL ORGANIZATION
Examines the effect of elections and electoral systems on economic outcomes as well as the converse, how economic variation influences elections and the choice of electoral systems.

**PSC 270** MECHANISMS OF INTERNATIONAL RELATIONS
This course consists of two parts. First, we will explore the logic of several causal mechanisms that help us to better understand patterns of international cooperation (such as coordination and collaboration problems), discussing several empirical applications.
Second, we will explore the logic of several causal mechanisms that help us to better understand patterns of international conflict (such as commitment and information problems), discussing several empirical applications. Game-theoretic and statistical models will appear throughout the course, but no prior background in either is assumed or required.

**PSC 271 RUSSIA & EAST EUROPE: POLITICS AND INTERNATIONAL RELATIONS**
Surveys the politics and international relations of the region in the second half of the twentieth century, devoting roughly equal attention to the Cold War and post-Cold War periods.

**PSC 273 POLITICAL ECONOMY OF EAST ASIA**
Focuses on three East Asian countries—China, Japan, and South Korea—from the perspective of international political economy. The course will examine the postwar developmental strategies of these countries and how the globalized world economy has transformed their state-led economies.

**PSC 274 INTERNATIONAL POLITICAL ECONOMY**
This course explores the interaction between politics and economics at the international level as well as between the international and domestic levels, involving various actors such as governments, interest groups, and multinational corporations. As an interdisciplinary field related to both international politics and international economics, international political economy examines the management and openness of the international economy, the determinants of foreign economic policy-making on topics such as trade, foreign exchange, capital controls, the politics of economic development, the effects of domestic political competition on international trade and capital flows, the determinants of regional integration, as well as the spread or containment of international financial crises. Students are expected to complete oral and written assignments which are designed to help them develop their problem solving, writing and presentation skills.

**PSC 276 THE POLITICS OF INSURGENCY AND TERRORISM**
Discusses the logic of asymmetric conflicts between states and non-state actors. We will examine the military, political, and social factors that determine when and where asymmetric warfare is likely to occur.

**PSC 276W POL INSURGENCY & TERROR**
See the description for PSC 276.

**PSC 278 FOUND MODERN INT'L POLITICS**

**PSC 279 WAR AND THE NATION STATE**
Examines the development of warfare and the growth of the state from the French Revolution to the end of the Second World War. Further examines the phenomenon of war in its broader socio-economic context, focusing on nationalism, bureaucratization, industrialization and democratization.

**PSC 281 FORMAL MODELS IN POLITICAL SCIENCE**
Examines how political factors, such as electoral systems, competitiveness of elections, bargaining power of NGOs, EU membership, and capital mobility, shape the development of business-government relations in Eastern and Central Europe and analyze how business-government relations affect macro-economic outcomes.

**PSC 283 CONTEMPORARY POLITICAL THEORY**
Deals with the role of vision and representation in current political thought. Includes reading a variety of critics and theorists such as John Dewey, Michel Foucault, and Susan Sontag.

**PSC 285 LEGAL REASONING & ARGUMENT**
The fundamental assumption of this course is that in most important political and social settings the ability of any actor to achieve her objectives is dependent on what she expects other relevant actors to do. This sort of interdependency is the defining feature of strategic interaction.
PSC 286 POL ECON OF DEVL COUNTRIES
What determines the size of government, the extent and type of public good provision, the effect of interest groups and lobbying on legislators, and the connection between business and electoral cycles? These are the types of questions this course addresses.

PSC 287 THEORIES OF POLITICAL ECONOMY

PSC 287W THEORIES OF POLITICAL ECONOMY

PSC 288 GAME THEORY
Provides a unified approach to understanding social phenomena such as arms races, provision of public goods, competition between firms, electoral campaigns, and bargaining. There are no formal prerequisites, but an aptitude for logical or mathematical reasoning is desirable.

PSC 289 STATE ROLE GLOBAL PERSP

PSC 291 FIRST AMENDMENT AND RELIGION
Examines the historical forces that led to the adoption of the religion clauses of the First Amendment, the subsequent development of those clauses (importantly through the close reading of key Supreme Court opinions), and religion's role in modern American society.

PSC 291W FIRST AMENDMENT AND RELIGION
See description for PSC 291.

PSC 304 URBAN CRIME AND JUSTICE

PSC 373 TERRITORY & GROUP CONFLICT
This graduate seminar examines a long neglected topic: the role of territory in group politics. Builds a basic understanding of why, when, how and which territory becomes contested.

PSC 373W TERRITORY & GROUP CONFLICT

PSC 380 SCOPE OF POLITICAL SCIENCE
Students examine political science in a reflective, disciplined, critical way. Primarily designed for entering Ph.D. students, but may be appropriate for undergraduate seniors considering graduate work in political science.

PSC 385 LEGAL REASONING & ARGUMENT

PSC 390 SUPERVISED TEACHING

PSC 390A SUPERVISED TEACHING

PSC 391 INDEPENDENT STUDY
Work beyond the regular course offerings done by arrangement between students and full-time faculty.

PSC 391W INDEPENDENT STUDY

PSC 392 PRACTICUM

PSC 393 SENIOR HONORS PROJECT
A year-long research project supervised by a faculty member in the department and culminating in a written work.

PSC 393W SENIOR HONORS PROJECT
**PSC 394** LOCAL LAW AND POLITICS INTERNSHIPS
Most internship placements are in the District Attorney’s or Public Defender’s offices. Occasionally one or two other law placements are available. Students may also propose an alternative political or law placement.

**PSC 394W** Local Law and Politics Internship

**PSC 395** RESEARCH

**PSC 396** WASHINGTON SEMESTER
One semester's work in Washington, D.C., as a member of the staff of a U.S. Senator or Representative.

**PSC 397** EUROPEAN POLITICAL INTERNSHIP
Internships are available for students in Edinburgh, London, Brussels, Bonn, Berlin and Madrid. Internships are in English in Edinburgh, London, and Brussels; students need proficiency in the language for the latter three placements.

**PSC 397F** UK POLITICS INTERNSHIP

**PSC 404** PROBABILITY & INFERENCEN
This course in mathematical statistics provides graduate students in political science with a solid foundation in probability and statistical inference. The focus of the course is on the empirical modeling of non-experimental data. While substantive political science will never be far from our minds, our primary goal is to acquire the tools necessary for success in the rest of the econometrics sequence. As such, this course serves as a prerequisite for the advanced political science graduate courses in statistical methods (PSC 405, 505, and 506).

**PSC 405** LINEAR MODELS
In this course, we will examine the linear regression model and its variants. The course has two goals: (1) to provide students with the statistical theory of the linear model, and (2) to provide students with skills for analyzing data. The linear model is a natural starting point for understanding regression models in general, inferences based on them, and problems with our inferences due to data issues or to model misspecification. The model's relative tractability has made it an attractive tool for political scientists, resulting in volumes of research using the methods studied here. Familiarity with the linear model is now essentially required if one wants to be a consumer or producer of modern political science research.

**PSC 407** MATHEMATICAL MODELING
Elementary game theory applications (Nash Equilibria, Prisoner’s Dilemma, Chicken), measures of voting power, social choice (Arrow’s Theorem).

**PSC 408** POSTIVE POLITCL THEORY

**PSC 462** ELECTIONS: DEVELOP COUNTRIES

**PSC 479** WAR & THE NATION STATE

**PSC 480** SCOPE OF POLITICAL SCIENCE
Uses basic concepts in the philosophy of science to explore a range of specific examples of research in the discipline with the aim of discerning more clearly what it means to say that social and political inquiry is scientific.

**PSC 487** THEORIES OF POLITICAL ECONOMY

**PSC 491** MASTER'S READINGS IN POL SCI

**PSC 495** MASTER'S RESEARCH IN POL SCI
PSC 502 POLITICAL & ECON NETWORKS
PSC 503 FORMAL MODELING COMP POLTCS
PSC 504 CAUSAL INFERENCE
PSC 505 MAX LIKELIHOOD ESTIMATION
PSC 506 ADV TOPICS IN METHODS
PSC 513 INTEREST GROUPS
PSC 518 EMERGENCE OF THE MOD CONGRES
PSC 523 AMERICAN FIELD SEMINAR
PSC 530 URBAN CHANGE&URBAN POLITICS
PSC 535 BUREAUCRATIC POLITICS
PSC 536 CORPORATE POLITICAL STRATEGY
PSC 545 JUDICIAL POLITICS
PSC 550 COMP POL FIELD SEMINAR
PSC 555 DEM POLITICAL PROCESSES
PSC 558 COMPARATIVE PARTIES&ELECTION

PSC 562 EMPIR RESEARCH PRACT
This course presents basic issues in empirical research in the social sciences. Classes will alternate between discussion of readings on approaches to empirical research and applied weeks, where students will present successive iterations of their own research in-progress. The research design topics covered will be generating observable implications of theory; case selection; collection of large-n observational and archival data; narrative case study; experiments and natural experiments; elite interviews; and participant observation. The course is intended for students preparing for their second year paper, third year students writing a dissertation prospectus, or ABD students with an empirical project that is at a fairly early stage. First-year PhD students should consult with the instructor prior to enrolling in the course. Students who take both PSC 562 and 563 may use either, but not both, to satisfy the course requirements for the Comparative Politics field.

PSC 563 CAUSAL INF: APPL & INTER
PSC 565 POLI ECON OF DEVELOPMENT
PSC 568 INTERNATIONAL ORGANIZATION
PSC 569 STATE FORMATION
PSC 570 CIVIL ORDER&CIVIL VIOLENCE
PSC 571 QUANT APPROACH-INTL POLTCS
PSC 572 INTERNATL POLITICS FIELD SEM
PSC 573 TERRIT & GROUP CONFLICT

PSC 575 SOCIAL CHOICE, ELECTORAL COMPETITION, AND LEGISLATIVE BARGAINING
The course covers the primary results in preference aggregation and applies them to models of elections and policy-making. The focus of the course is especially on dynamic models of politics. We begin by studying Arrow's theorem and majority voting, we review the workhorse models of elections in the political economy literature, and we use these models to study taxation and inequality, interest groups and lobbying, etc. In the second part of the course, we extend the analysis to repeated elections and electoral accountability. We cover the literature on political agency with moral hazard and adverse selection. The course will consist of a mix of lectures, discussion, and student presentation of assigned readings.

PSC 577 THEORIES OF CONFLICT

PSC 579 POLITICS OF INTL FINANCE

PSC 581 FOUNDATIONS OF POLI THEORY

PSC 582 POLITICAL ECONOMY II
This course covers much of the modern game-theoretic literature on models of voting and elections. It is meant to expose students to the techniques and models used in this line of research. Some of the topics covered include probabilistic voting, policy-motivated candidates, candidate entry, strategic voting, and issues of Information in elections, including uncertainty on the part of voters and candidates, and problems associated with private information in elections. The course covers both complete and incomplete information models and thus students must have a working knowledge of Bayesian games prior to taking this course.

PSC 584 GAME THEORY

PSC 585 POLITICAL ECONOMY II

PSC 589 POLITICAL ECONOMY I

PSC 591 PHD READINGS IN POL SCI

PSC 594 RESEARCH INTERNSHIP

PSC 595 PHD RESEARCH IN POL SCI

PSC 595A PHD RESEARCH IN ABSENTIA

PSC 895 CONT OF MASTER'S ENROLLMENT

PSC 897 MASTER'S DISSERTATION

PSC 899 MASTER'S DISSERTATION

PSC 985 LEAVE OF ABSENCE

PSC 986V FULL TIME VISITING STUDENT

PSC 995 CONT OF DOCTORAL ENROLLMENT

PSC 997 DOCTORAL DISSERTATION

PSC 997A DOCT DISSERTATN IN ABSENTIA
PSC 997B DOC DISS IN-ABSENTIA ABROAD

PSC 999 DOCTORAL DISSERTATION

PSC 999A DOCT DISSERTATN IN ABSENTIA

PSC 999B PHD IN-ABSENTIA ABROAD

PSY 101 INTRODUCTION TO PSYCHOLOGY
Is a balanced and integrated survey of psychology with coverage of both social and natural science domains. Sections of PSY 101 vary, but most consist of lectures, readings, discussions, and demonstrations. One Fall section is limited to Freshmen only.
Offered: Fall Spring Summer

PSY 110 NEURAL FOUNDATIONS OF BEHAVIOR
Introduces the structure and organization of the brain, and its role in perception, movement, thinking, and other behavior. Topics include the brain as a special kind of computer, localization of function, effects of brain damage and disorders, differences between human and animal brains, sex differences, perception and control of movement, sleep, regulation of body states and emotions, and development and aging.
Offered: Fall

PSY 111 FOUNDATIONS OF COG SCIENCE

PSY 112W COGNITIVE PSYCHOLOGY
Fulfills Upper-Level Writing Requirement.
Offered: Spring

PSY 113W BIOPSYCH OF SOC & CLIN BEHAV

PSY 151 PERCEPTION & ACTION

PSY 152 LANGUAGE & PSYCHOLUMINISCSTICS

PSY 153 COGNITION

PSY 161 SOCIAL PSYCHOLOGY & INDIVIDUAL DIFFERENCES
An introduction to the field of social psychology and an overview of research on individual differences in personality. Topics include the self, attitudes, social cognition, emotion, interpersonal attraction, relationships, helping, social influence, group behavior, and dispositional differences among people. Students will complete several individual difference measures and receive individualized feedback at the end of the course. Format is lectures augmented with discussions and demonstrations.
Offered: Spring Summer

PSY 161W SOCIAL PSYCHOLOGY & INDIVIDUAL DIFFERENCES
Fulfills Upper-Level Writing Requirement.
Offered: Spring

PSY 171 SOCIAL & EMOTIONAL DEVELOPMENT
An examination of the interpersonal, emotional, cognitive, and environmental factors that influence children's social and emotional development from early infancy through late adolescence.
Offered: Fall Summer

PSY 171W SOCIAL & EMOTIONAL DEVELOPMENT
Fulfills Upper-Level Writing Requirement.
Offered: Fall

**PSY 172** DEVELOPMENT OF MIND & BRAIN

**PSY 172W** DEVELOPMENT OF MIND & BRAIN

**PSY 181** THEORIES OF PERSONALITY & PSYCHOTHERAPY
A survey of personality, emphasizing modern theoretical approaches, basic methods of investigation, and the relations of these theories to psychotherapy and behavioral change.
Offered: Fall Summer

**PSY 181W** THEORY OF PERSONALITY & PSYCHOTHERAPY
Fulfills Upper-Level Writing Requirement.
Offered: Fall

**PSY 183** ANIMAL MINDS

**PSY 205** LAB IN DEVELOPMENT & LEARNING

**PSY 208** LAB IN PERCEPTION & COGNITION

**PSY 209** PSYCHOLOGY OF HUMAN SEXUALITY
Survey course on understanding sexuality. Includes such topics as biological sexual differentiation, gender role, gender-linked social behaviors, reproduction issues, intimacy, and the role of social and personal factors in psychosexual development.
Offered: Summer

**PSY 209W** HUMAN SEXUALITY

**PSY 210** SOCIAL COGNITION

**PSY 210W** SOCIAL COGNITION

**PSY 211** INTRODUCTION TO STATISTICAL METHODS IN PSYCHOLOGY
Introduction to the use of statistics in psychological research. Topics include descriptive statistics, correlation and regression, and inferential statistics. Examples are drawn from social and personality psychology. Logic of statistical inference and proper interpretation of research findings are emphasized. Please note that, because of the significant overlap between them, students may earn degree credit for only one of these courses: BCS 200, CSP/PSY 211, STT 211 and STT 212.
Offered: Fall Spring Summer

**PSY 219W** RESEARCH METHODS IN PSYCHOLOGY
An introduction to the basic concepts, logic, and procedures needed to do psychological research. Hands-on experience with all major phases of the research process is provided, including: surveying the existing literature, developing research hypotheses, collecting and analyzing data, and reporting the results in manuscript form.
Offered: Fall Spring

**PSY 221** AUDITORY PERCEPTION

**PSY 232** PSYCHOLOGY OF CONSUMERISM

**PSY 232W** PSYCHOLOGY OF CONSUMERISM

**PSY 242** NEUROPSYCHOLOGY
PSY 246 BIOLOGY OF MENTAL DISORDERS

PSY 259 LANGUAGE DEVELOPMENT

PSY 259W LANGUAGE DEVELOPMENT

PSY 261 LANGUAGE USE & UNDERSTANDING

PSY 262 AN APPROACH TO HUMAN MOTIVATION
A study of the motivational and emotional processes and theories that underlie both adaptive and maladaptive behavior. Includes consideration of research largely with human subjects.
Offered: Spring

PSY 262W HUMAN MOTIVATION & EMOTION
Fulfills Upper-Level Writing Requirement.
Offered: Spring

PSY 263 RELATIONSHIP PROCESS & EMOTIONS
Relationships are among the most important endeavors of human activity. In the past two decades, extensive theory and research has been devoted to understanding the processes of regulating people's thoughts, feelings, and behavior in meaningful relationships with friends, family, and romantic partners. The purpose of this seminar will be to explore this literature. We will examine psychological research on such important topics as attachment, emotion, intimacy, conflict resolution, relationship differences and similarities, and the impact of relationships on physical health and emotional well-being (as well as other topics that may arise).
Offered: Fall

PSY 263W RELATIONSHIPS PROCESS & EMOTIONS
Fulfills Upper-Level Writing Requirement.
Offered: Fall

PSY 264 INDUSTRIAL & ORGANIZATIONAL PSYCHOLOGY

PSY 264W INDUSTRIAL & ORGANIZATIONAL PSYCHOLOGY

PSY 265 LANGUAGE & THE BRAIN

PSY 267 PSYCHOLOGY OF GENDER

PSY 267W PSYCHOLOGY OF GENDER

PSY 274W COMM YOUR PROF PSYCH ID

PSY 276 PSYCHOLOGY OF PARENTING

PSY 278 ADOLESCENT DEVELOPMENT

PSY 278W ADOLESCENT DEVELOPMENT

PSY 280 CLINICAL PSYCHOLOGY
Offered: Fall

PSY 280W CLINICAL PSYCHOLOGY
Offered: Fall

**PSY 281** PSYCHOLOGY AND THE LAW

**PSY 281W** PSYCHOLOGY AND THE LAW

**PSY 282** ABNORMAL PSYCHOLOGY

**PSY 282W** ABNORMAL PSYCHOLOGY

**PSY 283** BEHAVIORAL MEDICINE

**PSY 283W** BEHAVIORAL MEDICINE

**PSY 289** DEVELP CHILD PSYCHOPATHOLOGY

**PSY 289W** DEVELP CHILD PSYCHOPATHOLOGY

**PSY 301W** TEACHING PSYCHOLOGY

In-depth consideration of topics in psychology and their communication. PSY 101 is a lab for this course.

Offered: Fall

**PSY 302** TEACHING PSY OF PERSONALITY

**PSY 303** TEACHING PSYCH OF MOTIVATION

**PSY 310W** HONORS RESEARCH

**PSY 311** HONORS RESEARCH

**PSY 323W** POS YOUTH DVLPMT:CHILD/ADOL

**PSY 340** DEPRESSION & ANXIETY SEMINAR

**PSY 351** RESEARCH IN DEV NEUROPSYCHOL

**PSY 352** RES IN DEVELOPMENTAL NEUROPSY

**PSY 356** RES IN ADOLESCENT DEVELOPMENT

**PSY 364** ACHIEVEMENT & MOTIVATION

**PSY 365** COMPETENCE&MOT:DEV COUNTRIES

**PSY 368W** SEMINAR IN HUMANISTIC PSYCH

**PSY 369** RESEARCH IN HUMAN MOTIVATION

**PSY 373** EXPLORING RES. IN SOC PSY I

**PSY 373W** EXPLORING RES. IN SOC PSY I

**PSY 374** EXPLORING RES IN SOC PSY II
PSY 375W ADV TOP: RELATIONSHIPS & EMO
PSY 376 SEM IN MOTIVATION THEORIES
PSY 377 EXPLORING RESRCH IN FAM PSY
PSY 378 EXPLOR RESRCH IN FAM PSY II
PSY 379 GERIATRIC MENTAL HEALTH PRAC
PSY 382 RESEARCH OF ANTISOCIAL BEHAV
PSY 382W RESEARCH OF ANTISOCIAL BEHAV
PSY 383 MORAL DEVELOPMENT
PSY 383W MORAL DEVELOPMENT
PSY 384 PRAC IN DEVELOP DISABILITIES
PSY 385 PRAC IN DEVELOP DISABILITIES
PSY 386 RES: POSITIVE YOUTH DVLPMNT
PSY 387 SOCIAL PSYCHOPHYSIOLOGY
PSY 387W RESCH ON ANTISOCIAL BEHAV II
PSY 390 SUPERVISED TEACHING OF PSYCH
PSY 390A SUPERVISED TEACHING
PSY 391 INDEPENDENT STUDY
PSY 391W INDEPENDENT STUDY
PSY 392 PRACTICUM
PSY 393 SENIOR PROJECT
PSY 394 INTERNSHIP
PSY 394W INTERNSHIP
PSY 395 HONORS RESEARCH
PSY 395W INDEPENDENT RESEARCH
PSY 396 RESEARCH: MARITAL SEMINAR
PSY 396W RESEARCH: FAMILY PSYCHOLOGY
PSY 398 RESEARCH IN MOTIVATION
**REL 101 INTRODUCTION TO THE OLD TESTAMENT**
Examination of the Old Testament/Hebrew Bible in Ancient Israel in its religious, historical, and literary contexts.
Offered: Fall

**REL 102 INTRODUCTION TO THE NEW TESTAMENT**
Examination of the texts of the New Testament, as well as other ancient sources, in an attempt to reconstruct a picture of Christianity in its beginnings. We will study the New Testament and the early Jesus movement within the wider context of Second Temple Judaism and the Greco-Roman world. Issues such as the development of the canon, the divisions with the Jesus Movement between Jews and Gentiles, the different understandings of the figure of Jesus, the conflicts which shaped the institutional development of the early church, and the conflict between Rome and the early church will receive particular attention and analysis. We will approach the texts of the New Testament as we would any other texts in antiquity, namely from an historical perspective. Students will be exposed to the traditional tools of biblical scholarship. No previous knowledge of the New Testament or of early Christianity is assumed.
Offered: Spring

**REL 103 HISTORY OF JUDAISM**
An introduction to the religious and cultural development of Judaism. Will emphasize Judaism as a living tradition, one which has been subject to both continuity and change among its practitioners throughout its history.
Offered: Fall

**REL 104 HISTORY OF CHRISTIANITY**
The development of Christianity throughout its twenty centuries of existence.
Offered: Fall

**REL 105 ASIAN SEARCH FOR SELF**
The basic teachings of Hinduism and Buddhism as to human nature and the paths to liberation.
Offered: Fall

**REL 106 FROM CONFUCIUS TO ZEN**
The teachings, practices, and social impact of the major religious traditions of China and Japan.
Offered: Spring

**REL 107 HISTORY OF ISLAM**
The development of Islam from its origins in the Qur'an and Muhammad's teachings, through the codification of the classical tradition in its various forms, and finally to the living Islam of the contemporary world.
Offered: Spring

**REL 111 PHILOSOPHY OF RELIGION**
Historical and recent readings are used to analyze issues such as: existence of God, divine attributes, the relation of God to the world, and faith and reason.
Offered: Fall

**REL 112 JUSTICE AND EQUALITY**
What is justice? Is it universal or does it vary across cultures and over time? Does justice require equality? If so, equality of what? What steps must we take to become more just and more egalitarian? What can art tell us about justice? What can justice tell us about art? The world’s most powerful minds have wrestled with these questions, and the answers they have posed shape our contemporary global debates. In this unique course, taught by multiple faculty from across the humanities and social sciences, we will consider different conceptions of justice and equality, with special attention to their relevance to the contemporary moment. Beginning with Plato’s Republic, we will address works by such thinkers as Rousseau, Mary Wollstonecraft, Franz Fanon, Ngugi wa Thiong'o, and Martin Luther King. Students and faculty from multiple sections of this course will occasionally meet as one group to analyze how different disciplines confront these complex topics. Outside speakers will also address the course.
REL 115 SEX AND POWER

REL 125 RELIGION, RACE, AND ETHNICITY IN AMERICA

REL 135 CLASSICAL MYTHOLOGY
The major myths of the classical gods and heroes using readings in translation and visual images.

REL 140 CLASSICAL & SCRIPTURAL BACKGROUNDS
The great tradition, from Homer, Greek drama, Plato, and Virgil to the bible and Dante.

REL 145 JUDAISM IN AMERICA
Explores the development of American Judaism through the interplay of religion, ethnicity, politics and culture.

REL 148 THE ARABIAN NIGHTS
The themes of love and sex, comedy and adventure, that have given this classic of world literature its universal appeal and timeless relevance.
Offered: Fall

REL 149 CONTEMPORARY FICTION FROM THE ARAB WORLD
This course introduces the students to major Arab authors of contemporary novels and short stories in excellent translations.

REL 151 THE BLUES
The origins of the Blues in the context of African-American culture in the late 19th and early 20th centuries, its rapid rise to becoming the dominant popular music in the African-American community, and the discovery of blues by white audiences.

REL 153 ISLAM IN AMERICA
This course surveys the history of Islam in the Americas from the days of slavery, to the so-called Black Muslims, to the post-65 immigrants, to 9/11, and beyond.

REL 155 RELIGION IN AMERICA
Leaning heavily on primary sources, this course surveys the history and ethnography of religion in the United States. Special attention will be given to personal experiences of the divine, political strife and social reform, tensions between sectarianism and pluralism, and the extraordinary religious history of western New York.

REL 156 REL OF THE AFRICAN DIASPORA
This course introduces students to African Diaspora religions, with a specific focus on the Caribbean and the Americas. Religious traditions such as Africanized Christianity, Cuban Santería, Haitian Vodou, Brazilian Candomblé and African American Spiritualism will be explored. Specifically, these traditions are presented to students through the use of community field trips, lectures, discussions, and films.
Offered: Fall

REL 157 AFRICAN AMERICAN RELIGIOUS HISTORY
Historical survey of religions as practiced by people of African descent living in North America. Christianity, Islam, and African-derived religions will be examined. Through its canvassing of doctrinal and ritual frameworks, students are afforded an opportunity to view the diverse and complex terrain of African American religion. Class format includes lectures, discussions, and film/music.

REL 159 INTERFAITH RELATIONS: THE GLOBALIZATION OF GOD
This course is an exploration of the dynamic interactions between people of the diverse religions of the world as religiously pluralistic societies adapt to their multi-faith reality. We study the history of interfaith dialogue globally, nationally and locally with a particular focus on the interfaith movement on college campuses. We use case studies to examine how religion, politics and culture interact to create opportunities for positive or negative engagement across religious traditions. We study the etiquette
of interreligious engagement in multi-religious contexts building skills for global citizenship. The course includes hands-on interfaith projects and site visits to religious and interfaith organizations in the local community.

**REL 160 PARLIAMENT OF WORLDS RELIGIONS**
This course will involve students in the global interfaith movement through participation in the Parliament of the World’s Religions in Salt Lake City from October 15-19, 2015. The Parliament is the preeminent gathering of the worldwide interfaith movement. Students will attend academic sessions, spiritual and religious practices in a diverse array of world religions and spiritualities, and cultural experiences including music, dance and art. They will network with scholars, activists, religious leaders and students from around the world. This course will develop intercultural and interreligious competency through hands-on interreligious and intercultural dialogue, enable students to develop relationships with people from diverse religious and cultural backgrounds, and to engage in scholarly research on topics of global significance.

**REL 161 NOT CULTS: NEW RELIGIOUS MOVEMENTS EAST AND WEST**
East and West: Often dismissed as fraudulent cults, NRMs are nevertheless products of the society in which they grow. This course takes a sociological approach in studying the theories, founders, organizations, and development strategies of various NRMs. While the focus will be on the better known groups in USA (such as People’s Temple, Hare Krishna, and Scientology), NRMs in Asia, for instance, Shinrikyo and Falun Gong, will also be included.

**REL 162W MYSTICISM**
Ancient and contemporary views of the nature of mystical experience and the quest for it as well as mysticisms impact on religion, art, and society.
Offered: Fall

**REL 164 DEATH, DYING & BEYOND**
This course explores the reactions to death, from both the dying ones and the surviving ones, as well as the methods to cope with death, such as envisioning the afterlife, religious rituals, and modern ethical debates over advanced bio-medical techniques. It covers from the antique to modern times.

**REL 167W SPEAKING STONES**
An examination of grave stones and funerary architecture in Rochester’s Mt. Hope cemetery with a focus on symbolic connections among the living and the dead.

**REL 168 MATERIAL LIFE OF RELIGION**
This course explores the material expression of religious traditions of the Americas—North, Central, and South America. Material forms like dance, dress, art, music, and architecture will be considered. In examining these material realities, the course illuminates the role that creative agency plays in the outward materializing of religious doctrines and beliefs. Class format includes lectures, discussions, presentations, and practitioner demonstrations.

**REL 170 RELIGION & HIP HOP CULTURE**

**REL 171 STORYTELLING IN INDIAN RELIGION**
In this course, students will read a wide variety of stories taken from the Hindu, Buddhist, and Jaina religious traditions, and examine the ways in which these stories encapsulate important philosophical and religious truths. The course will focus upon both the stories themselves and storytelling as religious instruction.

**REL 173 RELIGIONS OF JAPAN**

**REL 174 CHINESE RELIGIONS**
This is a survey course on religious traditions in China covering Buddhist, Daoist, and popular religion, while Confucian theorization and ritualization of ethics will also be included. The course aims at broadening your understanding of religion in general and deepening your conception of China as a cultural entity.

**REL 175 RELIGION & CHINESE SOCIETY**
This course examines the complicated relationship between religion and society in China. It takes a sociological approach, emphasizing that religion should be studied as a social phenomena that closely interacts with the development of society at large. The focus is on contemporary times from the end of the 19th century through present. During this period of time, China experienced tremendous change. This course introduces how such change impacted on and was expressed through religion, religiosity, and religious politics.

**REL 178 RELIGION, FOOD & EATING IN AMER**
American food traditions as elements of personal and communal religious identity.
Offered: Spring

**REL 179 JEWS AND POPULAR CULTURE**
Full title, "Entertaining America: Jews & Popular Culture", is a thematic introduction to the relationship between Jews and American entertainment media from the turn of the 20th century to today. Will address Jewish experience in radio, Hollywood, theatre, and television, as well as popular print culture such as comic books.

**REL 181 "OTHER" IN MODERN HEBREW LIT**

**REL 182 RELIGION AND LAW**
Depending on how we approach it, the law may be thought of as a body of text, as a canon for normative conduct, or as a set of practices. Religion, which may alternatively be conceptualized as creed, as ritual system, or as way (or ways) of life, possesses similar elasticity. In this mid-level interdisciplinary course, we draw on works of ethnography, philosophy, theory and literature to think through the various ways that these two concepts - Law and Religion - inform, interact with and place limits on one another.

**REL 187 SCI MAGIC OCCLT: ANTIQ-NEWTON**

**REL 188 ISSUES CONTEMP JEWISH THOUGHT**
Examination of issues relevant to both Jewish and non-Jewish life today. These include the Palestinian-Israeli conflict, science, technology, medical ethics, and abortion

**REL 189 SEXUALITY IN WORLD RELIGION**
The study of issues surrounding human sexuality as it has been treated in world religions. Issues, such as homosexuality, transgender/transsexual, marriage, family, sexual ethics, gender in world religions will be covered. Also, the role of Eros in mystical traditions of various world religions (Sufi, Christian Mysticism, Hinduism) will be examined in those instances where the erotic and the spiritual have been manifested together. Classroom discussion about what is the connection between sexuality and spirituality and how have religious traditions dealt with that connection? College hook-up culture is also examined in light of the study of spirituality and sexuality.

**REL 193 DANTE ALIGHIERI**

**REL 193Q DIVINE COMEDY OF DANTE ALIGHIERI**
Students learn how to approach Dante's poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the historical reality.

**REL 198Q DANTE'S DIVINE COMEDY II**
This course is the second segment of a two-semester sequence on the Divine Comedy. The purpose of the sequence is to introduce students to the liberal arts through one of the most significant texts in Western civilization.
Offered: Spring

**REL 200 INTRODUCTION TO ARCHAEOLOGY**
This course introduces the student to the field of archaeology through three units of study: 1) The history of excavation from ancient to modern times, 2) The techniques of excavation and the analysis of material remains, 3) Modern theories of cultural interpretation of archaeological sites.
Offered: Fall

REL 202 EROS & MADNESS IN PLATO
A careful and thorough line by line study of Plato's PHAEDRUS and SYMPOSIUM with a view to understanding each dialogue in itself and Plato's philosophic art of poetic composition. Some major themes in Plato will be intensively explored, such as The Soul and its part, the immortality of The Soul, the nature of learning, Eros and philosophic passion, and others. Mostly discussion.
Offered: Spring

REL 204 ANCIENT ROMAN RELIGION
This course explores the religion of the ancient Romans from the time of the founding of the city of Rome in the eighth century BC to the end of the Roman imperial period in the fifth century AD.
Offered: Fall

REL 205 MYSTICAL LITERATURE

REL 208 MEDICINE, MAGIC & MIRACLES
Examination of the intersection of religion and healing by examining the range of ways in which people understood and responded to the experience of illness and physical suffering in Greco-Roman antiquity and the various means by which they sought healing. Drawing on a range of sources, such as medical treatises, religious texts, and archaeological evidence, focus will be on: “Medicine” (the development of professional medicine in ancient Greece and Rome), “Magic” (magical practices, texts, and magicians as healers) and “Miracles” (miracle workers such as Jesus and Apollonius of Tyana, healing religions such as the Asklepios cults and the emerging Christian movement).

REL 209 MEDICINE, MAGIC & MIRACLES
An examination of the history and literature of the varieties of Judaism in the Greco-Roman world from the time of the Babylonian Exile until the destruction of the Second Temple and its aftermath.
Offered: Spring

REL 211 JEWS, PAGANS AND CHRISTIANS
Religious conflict in the ancient world.

REL 212 JEWISH PHILOSOPHY
Provides a survey of the major Jewish philosophers from both the medieval period (e.g., Saadya Gaon, Judah Halevi, Moses Maimonides) and the modern period (e.g., Moses Mendelssohn, Hermann Cohen, Franz Rosenzweig, and Emmanuel Levinas).

REL 213 JEWISH MYSTICISM

REL 214 IMAGINING THE JEW
Popular representations of Jews and their influence on Jewish acculturation, Americanization, and continuity.
Offered: Spring

REL 216 JEWS & MULTICULTURALISM IN AMERICA
Jewish immigration in the U.S. and the ways in which these immigrants chose to acculturate (or not).
Offered: Fall

REL 217 MODERN JEWISH PHILOSOPHY
In this seminar, we will read some of the classic works of modern Jewish philosophy. Authors include Hermann Cohen, Franz Rosenzweig, Emmanuel Levinas, and Joseph Soloveitchik.

REL 220 JEWISH WOMEN'S WRITING
The American Jewish experience, from the Eastern European immigrant experience to the recent religious revival, through the lens of Jewish women's literature.
Offered: Fall

**REL 222 VENICE AND THE JEWS**
By combining the examination of primary sources, the use of media, and the access to relevant digital materials, the course explores Jewish experience in Renaissance and early modern Italy, with a focus on Venice. Topics discussed will include the institution of the first ghetto in history, the economic role of Jewish merchants and moneylenders, Jews, crypto-Jews, and Judaizers in front of the Venetian Inquisition, and Jewish everyday life on the lagoon.

**REL 223 SACRED SPACES IN GREECE**

**REL 224 CHRISTIANITY & SOCIAL CHANGE**

**REL 226 GUILT**

**REL 227 ANCIENT CHRISTIANITY**
The rise of early Christianity from a persecuted minority religious movement to the dominant religion of the Roman Empire.

**REL 228 THE BODY IN EARLY CHRISTIANITY**
Though we often assume that religion deals with the spirit or the soul, the earliest Christians were deeply and primarily concerned with the body. In this course, we examine the multiple and various early Christian debates and practices relating to the body focusing in particular on issues related to physical suffering, death, sexuality, identity, and asceticism. Topics include: early Christian debates over the nature of the body and its relationship to personal identity and the nature of the self; conflicting ideas about the nature of Jesus’ incarnated, crucified, and resurrected body; gender, sexuality, and the bodies of men and women; Christian valorization of physical suffering and the bodies of the ill; the cult of the martyrs and the cult of the relics; the rise of asceticism and the bodies of saints. Theoretical readings (Foucault, Turner, Brown, Douglas) complement our reading of primary sources.

**REL 229 RELIGION AND VIOLENCE**
The natural theology of Thomas Aquinas.

**REL 230 AUGUSTINE, ANSELM & AQUINAS**
Three formative philosophical treatments of religious belief on such topics as the existence of God, freedom, providence, and evil.

**REL 231 CHRISTIAN HISTORY I**
Examines the emergence and evolution of Christianity from its 1st century roots in Palestinian Judaism and Jesus until the early 16th century and the pre-Reformation period. We will focus on such issues as Paul’s message about Jesus, the persecution of Christians in the Roman Empire, the emergence of Christian theology in both the Greek and Latin halves of the Empire, Christian monasticism, and the emergence of the papacy.
Offered: Fall

**REL 232 THE HISTORY OF THE CHRISTIAN CHURCH: FROM THE REFORMATION TO THE PRESENT**
The history of the western Christian churches, Catholic and Protestant, from the Reformation in 1517 to the present diversity.
Offered: Spring

**REL 234 CRY FREEDOM**
The principal ideas of various liberation theologians -- Latin American, Asian, African, Afro-American, and feminist. We will also examine the social worlds in which they think and write, thus trying to see the connection between their ideas and the social environments they want to liberate.
Offered: Fall
REL 236 CATHOLICISM IN AMERICAN LIFE
Catholics have been present in what today is called the United States from its earliest years as a British colony to the present, in which the Catholic population makes up roughly 25% of the nation as a whole. In this course we will examine the principal historical events that have transpired over the years as the Catholic Church expanded from its colonial origins, became a church of immigrants, and subsequently part of the established social order. Short reflection papers are required throughout the semester. Offered: Spring

REL 237 THE REFORMATION
On the 31st of October 1517 Martin Luther tacked 95 theological challenges to medieval Catholic beliefs on a cathedral door. Luther’s snowball led to the avalanche we call the Reformation. It permanently altered the western European world. Yet Luther was only a part of broad efforts to reform medieval Catholicism, many of which preceded Luther and many more would follow in the wake of his actions. Although related to problems in the church, the reform movement was also connected to complex economic, intellectual, and socio-political forces that were already at play. The purpose of this course is to examine what happened and why. The course will be conducted as a seminar and will require active participation and short essays.

REL 238 NATIVE AMERICAN ART & RELIGION
Case studies in Native American cultures where the visual arts articulate religious and philosophical systems of thought. Offered: Fall

REL 239 SPIRITUALISM IN AMERICA
The primary aim of this course is to explore the historical development and structural make-up of modern American Spiritualism. This course offers students a historical narrative that ranges from the early development of modern Spiritualism in upstate New York to current forms, such as African American Spiritual churches of New Orleans. In addition to this historical survey, the course examines major principles making up the framework of modern Spiritualism in America. Class format includes lectures, discussions, films, and field trips.

REL 240W MUHAMMAD & THE QUR’AN
The course studies the prophet Muhammad, the Qur’an, and their importance to medieval and modern Muslim culture. The prophet’s life and major themes of the Qur’an will be discussed together with interpretations of them found in Islamic legal, theological, philosophical, and mystical writings.

REL 242 CULTURES OF MUSLIM SPAIN
An examination of the history, literature, religion, and philosophy produced by Jews, Muslims, and Christians in medieval al-Andalus.

REL 243W ISLAMIC MYSTICISM
An advanced introduction to mystical life in Islam which studies mystical experience and theory and traces the importance of Islamic mysticism to religion, philosophy, art, and literature as found in medieval and modern Muslim societies.

REL 244W ISLAMIC MYSTICAL POETRY

REL 245 MEDIEVAL ISLAMIC&JEWISH PHIL

REL 247W ISLAM & THE THIRD WORLD
This course will study some of the important and often dramatic changes occurring in modern Islam by examining the effects on it of Third World political, social, and economic factors. Case studies will be drawn from twenty first century Islam but placed in context of similar situations involving other religion’s traditions in South America, Africa, and South Asia.

REL 248 ISLAM AND GLOBAL POLITICS
The response of the Islamic world to European colonialism and American foreign policy.

REL 249 RUSSIA GOES TO MOVIES
We will trace the changing face of Christ over two centuries of Russian culture in the works of Tolstoy, Dostoevsky, Bulgakov and Pasternak.

**REL 253 RELIGION AND SCIENCE**
A course on theories of religion, which examines recent research on the intersection between religion and science, in particular cognitive science and evolutionary biology.

**REL 254 HINDU MYTHOLOGIES**

**REL 256 DARWIN & RELIGION**

**REL 260 HINDU SHAMANS, MYSTICS & DOCTORS**
A close study of Hindu traditions focused on the theories and practices of esoteric Yoga, Tantra, and medicine.

**REL 261 AFRICAN DIASPORA IN LAT AMER**
An advanced introduction to the mysticism of the Hindu Tantras. Additional readings explore its historical and philosophical dimensions.
Offered: Spring

**REL 263 RELIGION & JAPANESE CULTR**

**REL 264 ISLAMIC ARCH IN CONTEXT**

**REL 265 ISRAEL/PALESTINE**

**REL 272 ADVICE AND DISSENT**
Examination of works that raise issues of common interest across the history of religions and create opportunities for comparison and challenging conversation regarding ideas and values centering on the spiritual life.

**REL 278 iRELIGION: RELIGION IN THE DIGITAL AGE**
Offered: Spring

**REL 279 TRINITY, INCARNATION, AND ATONEMENT**
We will look at recent philosophical work that attempts to explain or to understand three central concepts of Christianity, namely, the doctrines of the Trinity, the Incarnation, and Atonement. Particular attention will be paid to the question whether these doctrines can be given a coherent formulation and, if so, what sort of metaphysical views about identity, personhood, divinity, substance, and obligation would be required.
Offered: Spring

**REL 280 GOTHIC EUROPE**

**REL 281 BRITISH ART OF THE MID AGES**

**REL 282 DIVINE COMEDY OF DANTE ALIGHIERI**
Students learn how to approach Dante's poetry as a vehicle for thought, an instrument of self-discovery, and a way to understand and affect the historical reality.

**REL 283 THE CULTURE OF ZEN**
Buddhism was the most important element shaping the culture of medieval Japan. This course examines the doctrines and the monastic and worldly practices of Zen Buddhism as they shaped the daily life, literature and drama, art and architecture, calligraphy, interior decoration, and tea ceremony of the period.
REL 286 DANTE'S DIVINE COMEDY II
This course is the second segment of a two-semester sequence on the Divine Comedy. The purpose of the sequence is to introduce students to the liberal arts through one of the most significant texts in Western civilization.
Offered: Spring

REL 287 VISUALIZING DANTE

REL 288 CHAUCER
The principal works of Chaucer, in their historical and intellectual context. Readings in Middle English.

REL 289 VISIONARY, MYSTICS, SAINTS

REL 291 TOPICS IN PHILOSOPHICAL THEOLOGY
A seminar devoted to a selected topic in philosophy of religion. Same as PHL 260/460.
Offered: Spring

REL 293W THEORIES OF RELIGION
Methodological contributions to the critical study of religion. Required seminar for major and minor concentrators in religion.
Offered: Fall

REL 294 ON GENEALOGY

REL 296 ORIGINS OF RELIGION

REL 297 THE FIRST AMENDMENT & RELIGION IN AMERICA
The historical forces that led to the adoption of the religion clauses of the First Amendment, the subsequent development of those clauses (importantly through the close reading of key Supreme Court opinions), and religion's role in modern American society.
Offered: Spring

REL 299 FIELD METHODS IN ARCHAEOLOGY
In this course, taught on site at an archaeological excavation, students receive instruction and hands-on training in archaeological field and laboratory work, including remote sensing in archaeology, on-site surveying, excavation techniques, field documentation, and artifact identification and processing.

REL 301 MODERNITY AND MODERNISM

REL 308 GODS & GODDESSES IN HINDU MYTH

REL 310 THE MAHABHARATA
A study of the Mahâbhârata, the great Hindu epic, focusing on the symbolism of its narrative and the problems involved in its interpretation of myth and ritual.

REL 382 APOCALYPSE NOW...AND THEN

REL 389W SENIOR SEMINAR
This advanced seminar focuses on topics, methods, and theoretical models in the study of religion. Specific subjects are determined on a yearly basis. Restricted to Senior religion majors or by permission of Instructor.
Offered: Spring

REL 390 SUPERVISED TEACHING

REL 391 INDEPENDENT STUDY
By arrangement with the chair and with the consent of an instructor, to permit work beyond the regular course offerings. Limited to juniors and seniors with background in the selected area of reading.

**REL 392 HONORS RESEARCH**

**REL 393 SENIOR PROJECT**
A directed, individual study project open to senior concentrators.

**REL 393W SENIOR PROJECT**

**REL 394 INTERNSHIP**

**REL 395 INDEPENDENT RESEARCH**

**REL 396 HONOR'S RESEARCH**

**REL 491 READINGS**

**REL 591 PHD READINGS IN RELIGION**

**REL 986V FULL-TIME VISITING STUDENT**

**REL 987V PART TIME VISITING STUDENT**

**RST 126 RUSSIA NOW**
In this expanded 4-credit version of the 2-credit "Russia Now" course, students will follow current events in Russia through print and electronic sources, and write two short essays and one longer research paper.

**RST 127 RUSSIA NOW**
Students will follow current events in Russia through the internet, newspapers, magazines, and other sources (including satellite broadcasts when available). Along with a general attention to current events, each student will follow a particular area of interest (e.g. national identity, the market economy, politics, health issues, crime, culture, foreign policy) throughout the term, do background work on this topic and write it up towards the end of the term. Students who read Russian will be encouraged to use available sources in that language. This course is designed to (1) familiarize students with the most important issues facing Russia today and the historical/political/cultural context in which to place them; (2) to acquaint students with a variety of resources from the US, Russia, and a number of other countries and the different perspectives these sources may give on one and the same issue. Two credit course. May be taken more than once for credit.

**RST 128 RUSSIAN CIVILIZATION**

**RST 128W RUSSIAN CIVILIZATION**

**RST 133 THE RUSSIAN REVOLUTIONS**

**RST 160 THE NEW EUROPE**
One class each week will look at the post-war rise of the European Union and the extent to which it has successfully united a majority of European countries and created a new, post-national European identity. The other weekly class will follow current events in a Europe that stretches from the Atlantic coast eastward to the Ural Mountains of Russia, and comprises more than forty nations, each of which has its own “brand” based on a complex mix of historical, geographical, economic, and cultural factors. In English.

**RST 161 EUROPE TODAY**
Students follow events in Europe (from Spain to Russia) using print and electronic sources. Weekly discussions, analysis. Final essay. In English.
RST 171 IMPERIAL RUSSIA

RST 216 POLITICAL POST COMMUNISM

RST 222 RUSSIAN DRAMA
Introduces the Russian theater in its cultural and political context, with close readings of plays from the late 18th century to the late 20th century by Catherine II, Gribedov, Gogol, Ostrovsky, Tolstoy, Chekhov, Kharms, Bulgakov, and others. In English.

RST 224 RUSSIAN ART
The history of Russian art and architecture from the Christianization of Russia through the twentieth century. Students learn how to read icons, discern the major features of Russian churches, and follow the development of Russian painting from the age of realism to modern times. In English.

RST 231 GREAT RUSSIAN WRITERS
A survey of Russian literature from the beginning of the realistic period in the early nineteenth century to the rise of modernism at the turn of the twentieth century. We will read a broad variety of works by the most important writers, including Pushkin’s novel in verse Eugene Onegin, the novel Hero of Our Time by the ‘Russian Byron’ Mikhail Lermontov, Gogol’s comic narrative Dead Souls, Goncharov’s Oblomov (about a man who cannot get out of bed), short works by Dostoevsky and Tolstoy, and a play by Anton Chekhov. We will examine each work within the context of Russian literary and cultural history, paying particular attention to questions of structure and theme. All readings will be in translation. Four 5-6 page essays.

RST 234W COMPARATIVE AUTHORITARIANISM

RST 235 TOLSTOY’S WAR & PEACE

RST 235W TOLSTOY’S WAR & PEACE
A semester-long exploration of the world of War and Peace. Besides a close analysis of the novel, we read two important short works by Tolstoy and excerpts from historical accounts. We also view Russian, American and British attempts to film the novel. In English.

RST 237 DOSTOEVSKY
We unpack the writer’s life and art through close readings of his major works, including Poor Folk, Letters from the House of the Dead, Notes from Underground, Crime and Punishment and Brothers Karamazov. In English.

RST 237W DOSTOEVSKY

RST 240 NABOKOV - Unusual Emigre
A survey of the writer's Russian and American works and his contribution to world literature. Reading his most renowned novels, we will acquire an understanding of Nabokov's style, philosophy and ethical principles. Our discussions will address his ideas of life and death, space and time, regularity and chance, as well as such issues as otherness, individual freedom, and independent thinking. We will also analyze Nabokov's artistic discourse as we attempt to assess his legacy: was he a trickster as some critics describe him, or a deep thinker and brilliant stylist, as others argue? As an American college professor, whose lectures have been published, how did the author himself think literature should be taught? Readings include King, Queen, Knave, The Defense, Camera Obscura, Invitation to a Beheading, The Gift, Lolita, Pnin and Speak Memory. In English.

RST 243 CHEKHOV & SHORT STORY

RST 243W CHEKHOV & SHORT STORY

RST 244 RUSSIA GOES TO MOVIES
The image of Christ has dominated Russian art and culture for a thousand years. Indeed, it may even be argued that Russian literature began with Jesus Christ, for in its earliest forms it the numerous accounts written of saints lives it dealt with little else than living in accordance with the words and deeds of Christ. After briefly setting the context, the course focuses on the 19th and
20th centuries, exploring the extraordinary range of poetic encounters with the figure of Jesus in works by Tolstoy, Dostoevsky, Aleksandr Blok, Anna Akhmatova, Mikhail Bulgakov, Boris Pasternak, and Venedikt Erofeev.

RST 244W RUSSIA GOES TO MOVIES

RST 247 SECRET NATION

RST 247W SECRET NATION

RST 265W RUSSIAN LIT BTWN REVS

RST 267 RUSSIA GOES TO MOVIES

RST 267W RUSSIA GOES TO MOVIES

RST 289 DANGEROUS TEXTS

When modern Russian literature began to evolve in the mid-1600s, the printed or written text was immediately seen as a potential danger to the power of Church and State. In this course we will examine dangerous texts' from the 17th century to the present to see what aspects of texts and their authors were seen as threats and how these threats were dealt with. We will also see the ways in which writers did indeed perceive themselves as a second government' and how this changed the way they wrote. The reading list will include works by: Avvakum, Radishchev, Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Babel, Mayakovsky, Mandelstam, Pasternak, Yevtushenko, Solzhenitsyn, Voinovich, Grossman, and Sinyavsky/Tertz. The goal of this course is to arrive at an understanding of the unique role played by literature in Russian history. In English.

RST 289W DANGEROUS TEXTS

When modern Russian literature began to evolve in the mid-1600s, the printed or written text was immediately seen as a potential danger to the power of Church and State. In this course we will examine dangerous texts' from the 17th century to the present to see what aspects of texts and their authors were seen as threats and how these threats were dealt with. We will also see the ways in which writers did indeed perceive themselves as a second government' and how this changed the way they wrote. The reading list will include works by: Avvakum, Radishchev, Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Babel, Mayakovsky, Mandelstam, Pasternak, Yevtushenko, Solzhenitsyn, Voinovich, Grossman, and Sinyavsky/Tertz. The goal of this course is to arrive at an understanding of the unique role played by literature in Russian history. In English.

RST 390 SUPERVISED TEACHING

RST 391 INDEPENDENT STUDY

RST 392 PRACTICUM

RST 393 SENIOR ESSAY

RST 393W SENIOR ESSAY

RST 394 INTERNSHIP

RST 443 CHEKHOV & SHORT STORY

RUS 101 ELEMENTARY RUSSIAN I

Introduction to Russian grammar, phonetics, and conversation. Emphasis on practical Russian language skills. Lectures combine drills in Russian with presentations in English. Recitations are conducted primarily in Russian.

RUS 102 ELEMENTARY RUSSIAN II

Continuing introduction to Russian grammar, phonetics, conversation. Emphasis on practical Russian language skills. Lectures combine drilling in Russian with presentations in English. Recitations are conducted primarily in Russian.
**RUS 107 RUSSIAN IN RUSSIA**
Russian language and culture in St. Petersburg, Russia, in the month of June. Coursework in grammar, phonetics, conversation, reading, and culture, all oriented toward practical language skills. Lodging and meals with host families, and excursions in and around St. Petersburg, including a weekend trip to Moscow.

**RUS 110 CONVERSATIONAL RUSSIAN**
Conversation course designed to help students with some knowledge of Russian grammar develop facility with the spoken language. Emphasis on vocabulary building. Class time devoted to debate, discussions, and conversations about current topics and aspects of contemporary Russian culture. Themes for discussion both extemporaneous and planned. Students are expected to prepare for the assigned themes in advance. Recommended in conjunction with any Russian language course, except for RUS 101, for extra oral practice. May be taken twice.

**RUS 111 RUSHIN‘ THROUGH RUSSIAN: INTENSIVE BEGINNING RUSSIAN**
Our intensive introductory Russian course covers first-year Russian in just six weeks. Successful students will be able to enroll in the Intermediate Russian class in the fall. This course is ideal for those who would like to learn Russian, but whose busy schedules have prevented them from pursuing this interest during the academic year. Students will attend class 3 hours daily. We will cover all 10 chapters of Book One of Golosa, the textbook we use in RUS 101-102. Grading will be based on daily quizzes and weekly chapter tests.

**RUS 126 RUSSIA NOW**
In this expanded 4-credit version of the 2-credit "Russia Now" course, students will follow current events in Russia through print and electronic sources, and write three briefing papers and background reading on 1991-present.

**RUS 127 RUSSIA NOW**
Students track Russian events (International relations, Domestic Politics, the Economy, and Social Issues) through the use of print and electronic sources. Grading based on informed participation in weekly class discussions and three briefing papers.

**RUS 128 RUSSIAN CIVILIZATION**
Russian Civilization from its beginnings a thousand years ago to the present day. Each unit will cover historical and cultural background as well as literary texts. We will examine important national "myths" (narratives with a variable connection to the historical record) that govern the Russians' understanding of their history and culture, including: the Golden Age of Kiev, Moscow as the Third Rome, and the myths surrounding the city of Petersburg. We will analyze traditional tensions in Russian civilization which prevail today, such as those between: chaos and order, foreign influence and a strong national identity, innovation and tradition, and between radical skepticism and faith. Readings will include: Russian fairy tales and saints' lives, excerpts from the autobiography of the 17th century heretic Avvakum, tales by Pushkin and Gogol, one of Dostoevsky's most powerful and influential novels ("The Devils/Possessed"), and a wide range of materials from the twentieth century. In English.

**RUS 128W RUSSIAN CIVILIZATION**

**RUS 151 INTERMEDIATE RUSSIAN I**
Further development of grammatical concepts introduced in elementary Russian; building of vocabulary and comprehension skills; weekly film essays. One recitation per week.

**RUS 152 INTERMEDIATE RUSSIAN II**
Continuation of RUS 151 with further development of grammatical concepts; building of vocabulary and comprehension skills; weekly film essays. One recitation per week.

**RUS 157 RUSSIAN IN RUSSIA**
Russian language and culture in St. Petersburg, Russia, in the month of June. Coursework in grammar, phonetics, conversation, reading, and culture, all oriented toward practical language skills. Lodging and meals with host families, and excursions in and around St. Petersburg, including a weekend trip to Moscow.

**RUS 161 EUROPE TODAY**
Students follow events in Europe (from Spain to Russia) using print and electronic sources. Weekly discussions, analysis. Final essay. In English.

**RUS 171 IMPERIAL RUSSIA**

**RUS 200 ADVANCED RUSSIAN I**
Extensive reading of Russian prose with oral discussion and written compositions. Study of advanced Russian grammar topics.

**RUS 202 ADVANCED READINGS IN RUSSIAN**
An introduction to the reading of longer texts in Russian and the development of advanced writing, comprehension and conversation skills in Russian. In addition, we cover advanced Russian grammar topics, such as gerunds, active and passive participles, reported speech, perception and thought. Class conducted primarily in Russian.

**RUS 205 Advanced Readings in Russian II**
We read and discuss famous short stories by Pushkin, Gogol, Chekhov and others, write essays, make class presentations and cover various topics in advanced Russian grammar. Class conducted primarily in Russian.

**RUS 207 RUSSIAN IN RUSSIA**
Advanced Russian language and culture in St. Petersburg, Russia, in the month of June. Coursework in grammar, phonetics, conversation, reading, and culture, all oriented toward practical language skills. Lodging and meals with host families, and excursions in and around St. Petersburg, including a weekend trip to Moscow.

**RUS 209 ADVANCED RUSSIAN THROUGH FILM**
Students cover various topics in grammar and syntax at the advanced level with an emphasis on practical applications. Students will view six widely acclaimed films, which will form the basis for the acquisition of written skills, grammatical accuracy and conversational fluency. Class conducted primarily in Russian.

**RUS 212 ADVANCED LITERATURE & CULTURE ORIGINAL I**
Reading, composition and conversation for advanced students and heritage speakers of Russian.

**RUS 215 ADVANCED LITERATURE & CULTURE ORIGINAL II**
Reading, composition and conversation for advanced students and heritage speakers of Russian. Class conducted in Russian.

**RUS 218 ADVANCED LITERATURE & CULTURE ORIGINAL III**
This course is a continuation of RUS 212 and 215. Prior enrollment in RUS 212 and 215 is not required.

**RUS 222 RUSSIAN DRAMA**
Introduces the Russian theater in its cultural and political context, with close readings of plays from the late 18th century to the late 20th century by Catherine II, Gribedov, Gogol, Ostrovsky, Tolstoy, Chekhov, Khvams, Bulgakov, and others. In English.

**RUS 224 RUSSIAN ART**
The history of Russian art and architecture from the Christianization of Russia through the twentieth century. Students learn how to read icons, discern the major features of Russian churches, and follow the development of Russian painting from the age of realism to modern times. In English.

**RUS 226 RUSSIA'S SILVER AGE**

**RUS 231 GREAT RUSSIAN WRITERS**
A survey of nineteenth century Russian literature from the end of romanticism through the rise of realism and the advent of modernism. We read Pushkin’s Eugene Onegin, Lermontov’s Hero of Our Time, either Gogol’s Dead Souls or Goncharov's Oblomov, Tolstoy’s Anna Karenina, and two plays by the forerunner of modern theater, Anton Chekhov. In English.
RUS 235 TOLSTOY’S WAR & PEACE
A semester-long exploration of the world of War and Peace. Besides a close analysis of the novel, we read two important short works by Tolstoy and excerpts from historical accounts. We also view Russian, American and British attempts to film the novel. In English.

RUS 235W TOLSTOY’S WAR & PEACE
A semester-long exploration of the world of War and Peace. Besides a close analysis of the novel, we read two important short works by Tolstoy and excerpts from historical accounts. We also view Russian, American and British attempts to film the novel. In English.

RUS 237 DOSTOEVSKY
Dostoevsky has been called “a sick, cruel talent,” “a prophet of God,” “the Shakespeare of the lunatic asylum,” and “Russia's evil genius.” An avid student of human psychology, Dostoevsky was fascinated by the irrational aspects of human behavior. He was therefore skeptical of the rational utopian schemes of the radical materialists of his day and proposed instead that the best definition of the human being is “biped, ungrateful.” His works probe the psychological paradoxes of human behavior against the background of philosophical, theological, and ideological inquiries into the burning issues of his day and the cursed questions of human existence, such as the existence of evil and innocent suffering and the death of God. We unpack the writer’s life and works through close readings of important works, including "Poor Folk," "Letters from the House of the Dead," "Notes from Underground," "Crime and Punishment" and "Brothers Karamazov." In English. Freshmen welcome.

RUS 237W DOSTOEVSKY

RUS 240 NABOKOV - Unusual Emigre
A survey of the writer's Russian and American works and his contribution to world literature. Reading his most renowned novels, we will acquire an understanding of Nabokov's style, philosophy and ethical principles. Our discussions will address his ideas of life and death, space and time, regularity and chance, as well as such issues as otherness, individual freedom, and independent thinking. We will also analyze Nabokov’s artistic discourse as we attempt to assess his legacy: was he a trickster as some critics describe him, or a deep thinker and brilliant stylist, as others argue? As an American college professor, whose lectures have been published, how did the author himself think literature should be taught? Readings include King, Queen, Knave, The Defense, Camera Obscura, Invitation to a Beheading, The Gift, Lolita, Pnin and Speak Memory. In English.

RUS 243 CHEKHOV & SHORT STORY
The climax of Russian civic, lyric, and psychological realism in the works of Chekhov, Tolstoy, Bunin, Gorky, and others. Symbolism as a reaction to realism and as the beginning of literary modernism in Russia.

RUS 243W CHEKHOV & SHORT STORY

RUS 244 THE IMAGE OF CHRIST IN RUSSIAN LITERATURE
Jesus Christ has dominated Russian art and culture for a thousand years. We will contrast the Jesus of history with the Christ of faith, compare Gospel accounts, analyze icons and saints lives and then focus on important novels of the 19th and 20th centuries by Tolstoy (Resurrection), Dostoevsky (Idiot), Mikhail Bulgakov (Master and Margarita) and Boris Pasternak (Dr. Zhivago) that address the image of Christ. In English.

RUS 244W RUSSIA GOES TO MOVIES

RUS 247 SECRET NATION
The cult and culture of secrecy in Russia from Ivan the Terrible to the present. Russia was always an enigma, as tsarist and Soviet governments gathered and controlled information. The Russian people kept information from the government, and foreign states sent out disinformation of their own about Russia. There was an active underground in religion, literature, politics, the economy, and other areas. With glasnost, Gorbachev began the process of uncovering secrets from above, and a freer press began to do the same from below. We use materials from history, religion, literature, film, political science, and economics, to get a richly detailed picture of the information that was hidden, and the means by which this was accomplished. Official secrecy that was originally a defensive move came to undermine the state it sought to protect. At the end of the semester we see to what extent old habits of secrecy persists in Russia today. The course is taught in English.
**RUS 247W** SECRET NATION

The cult and culture of secrecy in Russia from Ivan the Terrible to the present. Russia was always an enigma, as tsarist and Soviet governments gathered and controlled information. The Russian people kept information from the government, and foreign states sent disinformation of their own about Russia. There was an active underground in religion, literature, politics, the economy, and other areas. With glasnost, Gorbachev began the process of uncovering secrets from above, and a freer press began to do the same from below. We use materials from history, religion, literature, film, political science, and economics, to get a richly detailed picture of the information that was hidden, and the means by which this was accomplished. Official secrecy that was originally a defensive move came to undermine the state it sought to protect. At the end of the semester we see to what extent old habits of secrecy persists in Russia today. The course is taught in English.

**RUS 248** Russian Identity: Continuity/Disruption

Russia's self-image as it has evolved from Kievan Rus to the present, the product of geography, war, religion, strong leaders, brilliant writers, and other factors. Readings include works by Russian (Pushkin, Gogol, Dostoevsky), Jewish (Zionists, Sholem Aleichem, Babel), and Soviet authors, as well as the most famous book by a foreign traveler to Russia (de Custine), and the transcript of a conference on post-Soviet identity, held on the eve of Putin's presidency. At the conclusion of the course, we will look at Russia 2016, where a resurgent national identity has serious repercussions for the West. In English.

**RUS 248W** RUSSIAN IDENTITY

**RUS 265** RUSSIAN LITERATURE BETWEEN THE REVOLUTIONS

A survey of emblematic stories and novels of the Soviet period, including works describing the first decade of the new regime, a Socialist Realist classic of the 1930s, literary tributes to Stalin, a manuscript that “would not burn” and important post-Stalin works that anticipate the literary renewal of the immediate post-Soviet period. In English.

**RUS 265W** RUSSIAN LITERATURE BETWEEN THE REVOLUTIONS

A survey of emblematic stories and novels of the Soviet period, including works describing the first decade of the new regime, a Socialist Realist classic of the 1930s, literary tributes to Stalin, a manuscript that “would not burn” and important post-Stalin works that anticipate the literary renewal of the immediate post-Soviet period. In English.

**RUS 267** RUSSIA GOES TO MOVIES

The dawn of the age of movies coincided with the Russian Revolution, and film was Lenin’s favorite art form. The course surveys Russian film from the beginnings to the present. The course investigates the major role that cinema played in shaping the national and political identity of the Soviet Union, and looks at what was artistically interesting and popular about these films, some of whose directors, like Eisenstein and Turkovsky, are among the world’s most influential filmmakers.

**RUS 267W** RUSSIA GOES TO MOVIES

**RUS 289** DANGEROUS TEXTS

When modern Russian literature began to evolve in the mid-1600s, the printed or written text was immediately seen as a potential danger to the power of Church and State. In this course we will examine dangerous texts' from the 17th century to the present to see what aspects of texts and their authors were seen as threats and how these threats were dealt with. We will also see the ways in which writers did indeed perceive themselves as a second government' and how this changed the way they wrote. The reading list will include works by: Avvakum, Radishchev, Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Babel, Mayakovsky, Mandelstam, Pasternak, Yevtushenko, Solzhenitsyn, Voinovich, Grossman, and Sinyavsky/Tertz. The goal of this course is to arrive at an understanding of the unique role played by literature in Russian history. In English.

**RUS 289W** DANGEROUS TEXTS

When modern Russian literature began to evolve in the mid-1600s, the printed or written text was immediately seen as a potential danger to the power of Church and State. In this course we will examine dangerous texts' from the 17th century to the present to see what aspects of texts and their authors were seen as threats and how these threats were dealt with. We will also see the ways in which writers did indeed perceive themselves as a second government' and how this changed the way they wrote. The reading list will include works by: Avvakum, Radishchev, Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Babel, Mayakovsky, Mandelstam, Pasternak, Yevtushenko, Solzhenitsyn, Voinovich, Grossman, and Sinyavsky/Tertz. The goal of this course is to arrive at an understanding of the unique role played by literature in Russian history. In English.
RUS 390 INDEPENDENT STUDY

RUS 391 INDEPENDENT STUDY

RUS 392 PRACTICUM

RUS 393 SENIOR ESSAY
A paper based upon independent study; required of concentrators.

RUS 443 CHEKHOV & SHORT STORY

SA 103 ESSNTL DIGITAL MEDIA TOOLKIT

SA 111 INTRODUCTION TO DRAWING
The coursework follows a sequence of studies that introduces basic drawing techniques, media, and composition through observation and analysis. Through a sequence of projects, students will have the opportunity to develop formal artistic skills and spatial relationships while enhancing their conceptual understanding of art as a visual language. Students will work from life and from the imagination to solve visual problems. Evaluation will primarily be based on the quantity and quality of studio production as well as the effort to thoughtfully contribute to critiques and discussions. Both traditional and non-traditional mediums and approaches will be explored. Relevant readings and short papers are to be expected. Not open to seniors. Studio art supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

SA 114 CREATING ARCHITECTURE - an Introduction
Architecture gives form to space. It is a specialized, functional art that defines space for a utilitarian purpose, based on a specific set of conditions. Architecture makes music out of notes, poetry out of words, it elicits a response. This course will explore the fundamental design principles that are the tools used to create architecture. Through a series of talks, images, field trips, and creative exercises, the students will gain a new awareness of a building, an outdoor space or an entire city. The students will become more sensitive to both the natural and built environment through this increased understanding of architecture. This course is intended to be very interactive and therefore enrollment will be limited to 10 students. Students will be evaluated on two papers and a final project. This course is open to all majors, and prior architecture study is not required. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder.

SA 121 INTRODUCTION TO PAINTING
Designed to introduce students to the art of painting through a traditional and experimental approach. Through a sequence of projects, students will have the opportunity to practice observational painting skills as well as experiment with a variety of non-traditional media and innovative techniques. This course aims to enhance each students understanding of historical and contemporary painting trends through studio practice and classroom dialogue. Ultimately, students will work toward creating mature visual works that communicate meaning effectively. Your paintings, in addition to their many other functions, will serve as documentation of your artistic and intellectual pursuit. Formal and informal critiques will regularly follow the completion of most projects. Readings and short papers are to be expected. Not open to seniors. Studio art supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

SA 131 INTRODUCTION TO SCULPTURE
A wide range of materials and techniques from metal and welding to assemblage, from wood to experimental methods and media is explored in the service of three dimensional art making. Investigations of the specific qualities of three dimensional media (i.e. space, form, scale, mass) and how they can convey ideas are made within a contemporary framework. Artworks synthesize a particular choice and use of materials and a concept or expression. It is the aim of this class to develop this synthesis, and in so doing, begin to develop the students' own working creative vocabulary. Not open to seniors. Studio art supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder.

SA 132 INTRODUCTION TO SCULPTURE: re)Collecting the Object
SA 141 INTRODUCTION TO PHOTOGRAPHY
This class is an introduction to the basic elements of photography, SLR and DSLR camera, darkroom techniques and alternative digital processes with an emphasis on photography as an interpretive and hybrid medium. The student will be asked to develop series of images using various photographic techniques and formats such as photograms (photography without a camera), collages and digital negatives printed on silver photographic paper. The class will explore alternative modes of thinking about the photographic frame and ways of presenting images. In conjunction to their studio projects, students will be exposed to current issues in photography and related media through readings, screenings and group discussions. No prior experience in photography is needed to successfully complete this class. Not open to seniors. $50 Studio Fee. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

SA 151 INTRODUCTION TO DIGITAL ART
This course engages artistic approaches to digital technologies with an emphasis on the history of new media art and contemporary networked art practices. Students will engage in studio assignments that use digital technologies as both tool and medium including digital imaging, sound, illustration, and 2D animation. Special emphasis will be placed on programming for visual artists using Processing, an open-source language and programming environment for the creation of generative and participatory artworks. Not open to seniors. $50 Studio Fee. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

SA 161 INTRODUCTION TO VIDEO ART
This course introduces the basic aesthetic and technical elements of video production. Emphasis is on the creative use and understanding of the video medium while learning to use the video camera, video editing processes and the fundamental procedures of planning video projects. Video techniques will be studied through screenings, group discussions, readings, practice sessions and presentations of original video projects made during the course. If the course fills and you would like to be added to the wait list, please contact Juliet Carello at juliet.carello@rochester.edu.

SA 172 CONCEPTS IN INTRODUCTORY 2D: THE BAUHAUS-HISTORY AND PRACTICE
With the formation of the Bauhaus in Weimar & then Dessau, Germany, in the early ‘20s, an institution was created that would bring together the arts & industrial manufacture in the modern world. Its artists, designers & architects can be credited with developing a visual vocabulary synonymous with our concept of modernity; its precepts are associated with figures such as Walter Gropius, Wassily Kandinsky, Paul Klee, Johannes Itten, Josef albers and Laszlo Moholy-Nagy. Their example & teaching inspired legions of students to design a modern environment; the methods of the Bauhaus studios are still felt today art & architectural schools throughout the world.

SA 181 INTRODUCTION TO PRINTMAKING
Printmaking is a non-digital, non-photographic manner of visual communication which emphasizes reproduction. This course will introduce procedures and techniques for creating multiple works on paper. Suites of prints will be made from linoleum cuts, woodcuts, drypoint etchings, monotypes and mono-prints. Drawing is key in the development of the reductive, visual language required in printmaking. Exercises which focus on print-based drawing skills will be assigned throughout. Not open to Seniors. Studio arts supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder.

SA 190 INTRODUCTION TO STUDIO PRACTICE
Provides a broad framework for contemporary art practice through studio production, discussion, presentation, and critique. While many courses, including Photography, 3-D, Painting, and Digital Art, often start with the medium and work toward the concept, the projects in this class will immediately integrate conceptual challenges with material and technique. While some projects may include traditional media such as pencils and paper, others may invite nontraditional media such as hair, text, earth and sound. Presentations and discussions will address historical and theoretical approaches to art as a way of supporting
expansive studio practice. Practice, critique, readings, and discussion combine to place emphasis on the visual investigation necessary to create educated and challenging art. Not open to seniors. Studio art supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

**SA 209 WRITING ON ART**

This course seeks to improve students' writing and analytical skills through analysis and experimentation with different styles of writing about contemporary and historical arts. Students analyze prose by artists, historians, cultural critics, poets, and others who have written on the visual arts, with an eye towards how writing on art can be a tool for improving expression in many areas. Slide lectures, discussions, and writing projects on objects of diverse media and historical eras will be augmented by visiting speakers and field trips to museums and galleries. This course fulfills one-half of the upper level writing requirement for both studio and art history majors. Permission of instructor required.

**SA 212A ADVANCED DRAWING**

Serious emphasis on independent proposals, research and production further coalesce ideas addressed in introductory level two dimensional courses. The projects demand formal consideration as well as thoughtful content; along with class participation, they act as documents of an engagement in creative thought, research, and problem-solving. Individual and group critiques occur throughout the course. Permission of instructor required. Studio art supplies fee: $50.

**SA 212B ADVANCED DRAWING**

Serious emphasis on independent proposals, research and production further coalesce ideas addressed in introductory level two dimensional courses. The projects demand formal consideration as well as thoughtful content; along with class participation, they act as documents of an engagement in creative thought, research, and problem-solving. Individual and group critiques occur throughout the course. Permission of instructor required. Studio art supplies fee: $50.

**SA 212C ADVANCED DRAWING**

Serious emphasis on independent proposals, research and production further coalesce ideas addressed in introductory level two dimensional courses. The projects demand formal consideration as well as thoughtful content; along with class participation, they act as documents of an engagement in creative thought, research, and problem-solving. Individual and group critiques occur throughout the course. Permission of instructor required. Studio art supplies fee: $50.

**SA 222A ADVANCED PAINTING**

The evolving continuation of painting with serious emphasis on independent proposals, research and production. The broadest examination of painting and related media is expected. Group discussion and individual meetings are on a weekly basis. Permission of instructor only. Studio art supplies fee: $50.

**SA 222B ADVANCED PAINTING**

The evolving continuation of painting with serious emphasis on independent proposals, research and production. The broadest examination of painting and related media is expected. Group discussion and individual meetings are on a weekly basis. Permission of instructor only. Studio art supplies fee: $50.

**SA 222C ADVANCED PAINTING**

The evolving continuation of painting with serious emphasis on independent proposals, research and production. The broadest examination of painting and related media is expected. Group discussion and individual meetings are on a weekly basis. Permission of instructor only. Studio art supplies fee: $50.

**SA 232A ADVANCED SCULPTURE**

This class broadens the investigation undertaken in Introductory 3D to include other materials and processes as well as a focus on working in an interdisciplinary fashion. This course furthers the development of the student's three dimensional form vocabulary and their options for articulating their ideas. The ability to verbally and visually articulate ideas is developed through group discussion and critique. Permission of instructor required. Studio Art Supplies Fee: $50

**SA 232B ADVANCED SCULPTURE**

This class broadens the investigation undertaken in Introductory 3D to include other materials and processes as well as a focus on working in an interdisciplinary fashion. This course furthers the development of the student's three dimensional form vocabulary...
and their options for articulating their ideas. The ability to verbally and visually articulate ideas is developed through group discussion and critique. Permission of instructor required. Studio Art Supplies Fee: $50

**SA 232C ADVANCED SCULPTURE**
This class broadens the investigation undertaken in Introductory 3D to include other materials and processes as well as a focus on working in an interdisciplinary fashion. This course furthers the development of the student's three dimensional form vocabulary and their options for articulating their ideas. The ability to verbally and visually articulate ideas is developed through group discussion and critique. Permission of instructor required. Studio Art Supplies Fee: $50

**SA 242A ADVANCED PHOTOGRAPHY**
Advanced Photography will examine and interrogate the multiple roles that contemporary photography and related media play within our unique cultural moment with an emphasis on hybrid/multidisciplinary approaches to the medium. Digital photography processes, large format ink jet printing and studio lighting will be covered within a conceptual framework. Students entering this course are expected to have an understanding of contemporary art, artistic writing and be willing to advance their studio practice. In conjunction to their studio project, students will view and analyze a range of photographic practices, read contemporary criticism and engage in probing discussion and original writing. Permission of instructor. $50 studio fee.

**SA 241B ADVANCED PHOTOGRAPHY**
Advanced Photography will examine and interrogate the multiple roles that contemporary photography and related media play within our unique cultural moment with an emphasis on hybrid/multidisciplinary approaches to the medium. Digital photography processes, large format ink jet printing and studio lighting will be covered within a conceptual framework. Students entering this course are expected to have an understanding of contemporary art, artistic writing and be willing to advance their studio practice. In conjunction to their studio project, students will view and analyze a range of photographic practices, read contemporary criticism and engage in probing discussion and original writing. Permission of instructor. $50 studio fee.

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**SA 243A DANCE ON CAMERA/CAMERA DANCE**
Students will create and perform multi-media site-specific choreography and installations that will be captured and re-mixed. Geared for students of dance, film and photography, this course will explore creative collaboration, composition, lens based art and post-production. Students will be encouraged to curiously and playfully embody manipulations of movement material and play with technology to better understand different points of view and to explore the elements of site, space, shape, time and effort to see how they affect quality and content. Students will gain hands-on experience with digital photo and video equipment and editing software, and will serves roles both in front of and behind the camera. $50 Equipment Usage Fee.

**SA 243B DANCE ON CAMERA/CAMERA DANCE**
Students will create and perform multi-media site-specific choreography and installations that will be captured and re-mixed. Geared for students of dance, film and photography, this course will explore creative collaboration, composition, lens based art and post-production. Students will be encouraged to curiously and playfully embody manipulations of movement material and play with technology to better understand different points of view and to explore the elements of site, space, shape, time and effort to see how they affect quality and content. Students will gain hands-on experience with digital photo and video equipment and editing software, and will serves roles both in front of and behind the camera. $50 Equipment Usage Fee.

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effort to see how they affect quality and content. Students will gain hands-on experience with digital photo and video equipment and editing software, and will serves roles both in front of and behind the camera. $50 Equipment Usage Fee.

**SA 244A ADVANCED PHOTO/DIGITAL: EXPANDED PHOTOGRAPHY**

The class will examine and interrogate the multiple roles that contemporary photography and related media plays within our unique cultural moment with an emphasis on hybrid/multidisciplinary approaches to the medium. The class projects will explore site-specific photographic installation, time based imagery, large format printing, book and object making. Digital processes and studio lighting techniques will also be covered. In conjunction to their studio project, students will view and analyze a range of photographic practices, read contemporary criticism and engage in probing discussion and original writing. Upon completion of this course, students will have the capacity to more confidently engage the work they make within the broader discourse of art and will acquire an understanding of the concepts and vocabulary necessary for critical discussion of photographic work, their own and that of others. Minimal experience with digital photography is required. Permission of instructor. $50 studio fee.

**SA 244B ADVANCED PHOTO/DIGITAL: EXPANDED PHOTOGRAPHY**

The class will examine and interrogate the multiple roles that contemporary photography and related media plays within our unique cultural moment with an emphasis on hybrid/multidisciplinary approaches to the medium. The class projects will explore site-specific photographic installation, time based imagery, large format printing, book and object making. Digital processes and studio lighting techniques will also be covered. In conjunction to their studio project, students will view and analyze a range of photographic practices, read contemporary criticism and engage in probing discussion and original writing. Upon completion of this course, students will have the capacity to more confidently engage the work they make within the broader discourse of art and will acquire an understanding of the concepts and vocabulary necessary for critical discussion of photographic work, their own and that of others. Minimal experience with digital photography is required. Permission of instructor. $50 studio fee.

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**SA 252A ADVANCED DIGITAL ART**

This course explores artistic approaches to the internet and emerging technologies with an emphasis on contemporary issues, artists, and theories of digital art. Students will engage in a studio practice using artist-centered techniques of hacking, programming, and imaginative re-use and re-purposing of digital software and hardware. Students’ experimental projects will individual areas of study and interests and will take the form of social networking actions, physical computing, circuit bending, net art works, and recombinant imaging. Open-source, interdisciplinary, and collaborative strategies will be encouraged. This course will culminate with an online exhibition of works using social media apps for a local/physical gallery space as well as global distribution via networked media. Prerequisites SA 151. Permission of instructor. $50 studio fee.

**SA 252B ADVANCED DIGITAL ART**

This course explores artistic approaches to the internet and emerging technologies with an emphasis on contemporary issues, artists, and theories of digital art. Students will engage in a studio practice using artist-centered techniques of hacking, programming, and imaginative re-use and re-purposing of digital software and hardware. Students’ experimental projects will individual areas of study and interests and will take the form of social networking actions, physical computing, circuit bending, net art works, and recombinant imaging. Open-source, interdisciplinary, and collaborative strategies will be encouraged. This course will culminate with an online exhibition of works using social media apps for a local/physical gallery space as well as global distribution via networked media. Prerequisites SA 151. Permission of instructor. $50 studio fee.

**SA 252C ADVANCED DIGITAL ART**

This course explores artistic approaches to the internet and emerging technologies with an emphasis on contemporary issues, artists, and theories of digital art. Students will engage in a studio practice using artist-centered techniques of hacking, programming, and imaginative re-use and re-purposing of digital software and hardware. Students’ experimental projects will
individual areas of study and interests and will take the form of social networking actions, physical computing, circuit bending, net art works, and recombinant imaging. Open-source, interdisciplinary, and collaborative strategies will be encouraged. This course will culminate with an online exhibition of works using social media apps for a local/physical gallery space as well as global distribution via networked media. Prerequisites SA 151. Permission of instructor. $50 studio fee.

**SA 253A ADVANCED DIGITAL ART: THE ART OF THE REMIX, VJING & INTERMEDIA PERFORMANCE**

Students in this course will produce live, digital collaborative works and performances involving moving images, music, and sound. Collaborative techniques will be emphasized. Students will use digital video and sound production tools help them build, practice, and perform original works.

**SA 253B ADVANCED DIGITAL ART: THE ART OF THE REMIX, VJING & INTERMEDIA PERFORMANCE**

Students in this course will produce live, digital collaborative works and performances involving moving images, music, and sound. Collaborative techniques will be emphasized. Students will use digital video and sound production tools help them build, practice, and perform original works.

**SA 253C ADVANCED DIGITAL ART: THE ART OF THE REMIX, VJING & INTERMEDIA PERFORMANCE**

Students in this course will produce live, digital collaborative works and performances involving moving images, music, and sound. Collaborative techniques will be emphasized. Students will use digital video and sound production tools help them build, practice, and perform original works.

**SA 262A ADVANCED VIDEO ART**

This course explores video art processes with an emphasis on contemporary practice, emerging trends, and digital technologies. Students will consider time-based digital objects and sound from artistic perspectives questioning and “interrupting” conventional narrative forms while embracing experimental techniques to generate unexpected results. Original projects will involve installation, single channel, sound, and networked environments. Works will be examined within a critical framework of readings, critiques, and viewings. Permission of instructor. $50 studio fee.

**SA 262B ADVANCED VIDEO ART**

This course explores video art processes with an emphasis on contemporary practice, emerging trends, and digital technologies. Students will consider time-based digital objects and sound from artistic perspectives questioning and “interrupting” conventional narrative forms while embracing experimental techniques to generate unexpected results. Original projects will involve installation, single channel, sound, and networked environments. Works will be examined within a critical framework of readings, critiques, and viewings. Permission of instructor. $50 studio fee.

**SA 262C ADVANCED VIDEO ART**

This course explores video art processes with an emphasis on contemporary practice, emerging trends, and digital technologies. Students will consider time-based digital objects and sound from artistic perspectives questioning and “interrupting” conventional narrative forms while embracing experimental techniques to generate unexpected results. Original projects will involve installation, single channel, sound, and networked environments. Works will be examined within a critical framework of readings, critiques, and viewings. Permission of instructor. $50 studio fee.

**SA 273A BOOKMAKING**

In this course students examine their environment through projects that explore narration, sequence, and series. Creative approaches to narrative and non-narrative sequence are used as a framework for developing personal concepts and overall artistic strengths. Within this context, students create and develop two-dimensional images through a variety of materials and techniques. Students will be introduced to the use of image, color and text as formal and conceptual elements. Course work consists of both directed and individual projects with an emphasis on the integration of drawing and printmaking, supplemented with seminar style discussion of selected texts. Studio art supplies fee: $50. Permission of instructor.

**SA 273B BOOKMAKING**

In this course students examine their environment through projects that explore narration, sequence, and series. Creative approaches to narrative and non-narrative sequence are used as a framework for developing personal concepts and overall artistic strengths. Within this context, students create and develop two-dimensional images through a variety of materials and techniques. Students will be introduced to the use of image, color and text as formal and conceptual elements. Course work consists of both
directed and individual projects with an emphasis on the integration of drawing and printmaking, supplemented with seminar style discussion of selected texts. Studio art supplies fee: $50. Permission of instructor.

**SA 273C BOOKMAKING**

In this course students examine their environment through projects that explore narration, sequence, and series. Creative approaches to narrative and non-narrative sequence are used as a framework for developing personal concepts and overall artistic strengths. Students create and develop two-dimensional images through a variety of materials and techniques. Students will be introduced to the use of image, color and text as formal and conceptual elements. Course work consists of both directed and individual projects with an emphasis on the integration of drawing and printmaking, supplemented with seminar style discussion of selected texts. Studio art supplies fee: $50. Permission of instructor.

**SA 281A PERFORMANCE ART & SOCIAL INTERVENTION**

Performance art is one of the most exciting and misrepresented forms of artistic expression in contemporary art. It intentionally defies any precise definition, giving artists the authority to combine traditional & non-traditional aspects of painting, drawing, photography, literature, physics, fibers, video, law, computer graphics, sound, poetry, found objects, architecture, costume design & sculpture. Performance art often blurs the boundaries between art & life & often encourages us to reconsider our beliefs regarding spirituality, identity, body, space, politics, & the definition of art itself. In this studio art class, we will look at the most fascinating performance artists from the 1960s to the present while designing our own "live sculptures" & "time-based art." No previous knowledge of performance art is necessary. This course may be taken more than once for advanced-level credit. Permission of instructor required. Studio art supplies fee: $50.

**SA 281B PERFORMANCE ART AND SOCIAL INTERVENTION**

Performance art is one of the most exciting and misrepresented forms of artistic expression in contemporary art. It intentionally defies any precise definition, giving artists the authority to combine traditional & non-traditional aspects of painting, drawing, photography, literature, physics, fibers, video, law, computer graphics, sound, poetry, found objects, architecture, costume design & sculpture. Performance art often blurs the boundaries between art & life & often encourages us to reconsider our beliefs regarding spirituality, identity, body, space, politics, & the definition of art itself. In this studio art class, we will look at the most fascinating performance artists from the 1960s to the present while designing our own "live sculptures" & "time-based art." No previous knowledge of performance art is necessary. This course may be taken more than once for advanced-level credit. Permission of instructor required. Studio art supplies fee: $50.

**SA 281C PERFORMANCE ART AND SOCIAL INTERVENTION**

Performance art is one of the most exciting and misrepresented forms of artistic expression in contemporary art. It intentionally defies any precise definition, giving artists the authority to combine traditional & non-traditional aspects of painting, drawing, photography, literature, physics, fibers, video, law, computer graphics, sound, poetry, found objects, architecture, costume design & sculpture. Performance art often blurs the boundaries between art & life & often encourages us to reconsider our beliefs regarding spirituality, identity, body, space, politics, & the definition of art itself. In this studio art class, we will look at the most fascinating performance artists from the 1960s to the present while designing our own "live sculptures" & "time-based art." No previous knowledge of performance art is necessary. This course may be taken more than once for advanced-level credit. Permission of instructor required. Studio art supplies fee: $50.

**SA 282A ADVANCED PRINTMAKING**

This course is a continuation the conceptual, technical and aesthetic possibilities learned in previous printmaking courses. Students will expand their technical abilities in relief printing and screen-printing as well as alternative printmaking techniques. While assignments will vary in duration and focus, the content or subject matter of each project is largely self-directed. Students will be challenged to develop technique as well as effective visual messages. A willingness to learn from taking risks is as important as the ability to execute the basic printmaking techniques. The course will consist of demonstrations, discussions, print projects, student presentations, and critiques. Studio Art supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

**SA 282B ADVANCED PRINTMAKING**

This course is a continuation the conceptual, technical and aesthetic possibilities learned in previous printmaking courses. Students will expand their technical abilities in relief printing and screen-printing as well as alternative printmaking techniques. While assignments will vary in duration and focus, the content or subject matter of each project is largely self-directed. Students will be challenged to develop technique as well as effective visual messages. A willingness to learn from taking risks is as
important as the ability to execute the basic printmaking techniques. The course will consist of demonstrations, discussions, print projects, student presentations, and critiques. Studio Art supplies fee: $50. If the course fills and you would like to be added to the wait list, please contact Stephanie Ashenfelder at stephanie.ashenfelder@rochester.edu.

**SA 282C ADVANCED PRINTMAKING**

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**SA 292A MARKINGS, METHODS & MATERIALS**

This course explores the boundaries of conventional studio production through experimentation with nontraditional materials and invented approaches. It investigates the act of making a mark and probes the motives and impulses inherent in that process. The projects demand formal consideration as well as thoughtful content; along with class participation, they act as documents of an engagement in creative thought, research, and problem-solving. Individual and group critiques occur throughout the course. Markings, Methods, and Materials can be viewed as an extension of any 100-level studio course and provides an opportunity to exercise and explore the techniques and cognitive processes that are utilized and applied in art production and adjacent fields of learning. Permission of instructor required. Studio art supplies fee: $50.

**SA 292B MARKINGS, METHODS & MATERIALS**

This course explores the boundaries of conventional studio production through experimentation with nontraditional materials and invented approaches. It investigates the act of making a mark and probes the motives and impulses inherent in that process. The projects demand formal consideration as well as thoughtful content; along with class participation, they act as documents of an engagement in creative thought, research, and problem-solving. Individual and group critiques occur throughout the course. Markings, Methods, and Materials can be viewed as an extension of any 100-level studio course and provides an opportunity to exercise and explore the techniques and cognitive processes that are utilized and applied in art production and adjacent fields of learning. Permission of instructor required. Studio art supplies fee: $50.

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**SA 300 ART NY NEW MEDIA CULTURE**

Harvestworks will offer this course as an introduction to digital art for Art New York interns. Special application is required. Permission of instructor only.

**SA 305K ART NEW YORK COLLOQUIUM**

As an integral part of the internship program, all students participating in ANY will meet weekly with the program's resident director. The class will visit museums, art galleries, film & media screenings, & learn from these visits through readings, papers, presentations & discussions. The colloquium will also serve to provide an intellectual framework for understanding the operations of the NY art world & to allow students to discuss with one another their experiences at the various institutions where they intern. Each student will be expected to make a presentation about their internship to the ANY group. There will be an entrepreneurial component which will introduce the students to a wide variety of entrepreneurial activity & innovative practices within arts and culture. Through guest speakers, seminars & field trips the students will learn how entrepreneurial endeavors develop. By the end of the semester, the students will create their own proposal for an entrepreneurial project.

**SA 390 SUPERVISED TEACHING**
SA 391 INDEPENDENT STUDY
Individual studio work at an advanced level and under the guidance of a member of the studio arts faculty.

SA 391W INDEPENDENT STUDY
Individual studio work at an advanced level and under the guidance of a member of the studio arts faculty.

SA 392 PRACTICUM
Each student will intern in an institution arranged or approved by the Art and Art History faculty. The purpose of this internship is to give students an insiders' view of the workings of the art world. Students will be expected to document their internship experiences as a means of evaluation at the end of the semester. This program is limited to second, third, fourth and fifth year undergraduate students interested in learning about all aspects of contemporary art, about how art gets made, how it reaches its public, and the processes of its interpretation. Internships will consist of 20 hours per week, for which students will receive eight credits. Permission of instructor required.

SA 393 SENIOR PROJECT
See “Requirements for Honors in Studio Art.”

SA 394 INTERNSHIP

SA 395 HONORS SEMINAR

SA 396 SENIOR STUDIO AND SEMINAR
This course is designed to support the transition between undergraduate coursework in the arts & independent, professional, and post-graduate pursuits. The course has 3 essential components: 1. Studio Production and Critique, 2. the Mechanics of the Profession, and 3. Contemporary Artists and Issues as they relate to Visual and Cultural Theory, Art History, & Art Criticism. The production component will consist of the intensive critique of ongoing studio work with emphasis on the importance of shifting toward self-motivated production. The fall semester will serve as the first half of the development toward a solo thesis exhibition & includes an artist talk, which includes documentation, explanation, reference, & an explanation of the relevance of the students work in the context of contemporary art. The spring semester includes a solo exhibition of the students work that is the culmination of their research & production. This class is limited to & required of senior studio majors. Studio Art Fee: $50

SA 397 SENIOR STUDIO AND SEMINAR: SPRING
This course is designed to support the transition between undergraduate coursework in the arts and independent, professional, and post-graduate pursuits. The course has three essential components: (1) Studio Production and Critique, (2) the Mechanics of the Profession, and (3) Contemporary Artists and Issues as they relate to Visual and Cultural Theory, Art History, and Art Criticism. By the end of the semester, students will have prepared an artist talk on their work through documentation, explanation, reference, and relevance in the context of contemporary art. This class is limited to and required of senior studio majors. Permission of instructor required. Studio art supplies fee: $50.

SA 491 INDEPENDENT STUDY

SA 591 INDEPENDENT STUDY

SAB 090 STUDY ABROAD ORIENTATION

SAB 092 ROCHESTR IN AREZZO-ORIENTATN

SAB 286 SUMMER IN HONG KONG

SAB 287 AREZZO ITALY SUMMER

SAB 292 ISRAEL: BRAUDE SEM

SAB 293 ROCHESTER IN AREZZO ITALY SE
SOC 115 CRIME, CRAZINESS, DEV BEHAV 
Deviant behavior is ubiquitous in every society; most of us break rules of one sort or another every day, ignoring a friend, exceeding post speed limits, and the like. But there is also egregious deviance -- murder, assault, robbery, which sometimes defies understanding. From a sociological perspective, illness and mental disorder is also deviant behavior -- breaking the rule of staying healthy or not doing those things that jeopardize one's health, though in many instances people become ill despite their best intentions.

SOC 125 CRIME, CRAZINESS AND OTHER DEVIAN'T BEHAVIOR 
Deviance, or rule-breaking conduct, is ubiquitous in modern society: ranging from lies and insults in mundane interpersonal relations to embezzlement, fraud, and the like in commercial settings to gun violence in schools, theaters, shopping malls and similar locales. From a sociological point of view, mental disorder can also be seen as a form of deviance, viz. breaking an implicit rule to be 'sane.'

Offered: Spring

SOC 205 MICROSOCIOLGY 
Intensive study of semester-long self-analytic groups. Small group and individual interaction. Theories of interaction, small group processes, conversation analysis, narrative interpretation.

Offered: Fall

SOC 206 ADVANCED MICROSOCIOLGY
Theories of interaction, small group processes, conversation analysis, narrative interpretation. Intensive study of semester-long
self-analytic groups. Students may take both SOC 205 and 206.
Offered: Spring

**SOC 221** LOVE, FRIENDSHIP & COMMUNITY
Sociological study of personal ties and face-to-face social groups: kinship networks, friendship groups, political and religious
ideological groups, intellectual circles.

**SOC 310K** SOCIAL NET THEORY & ENTREPRENEURIAL ACTIVITY IN SILICON VALLEY I
Network theory is at the forefront of an emerging collaboration among academics, with many new and interesting
interdisciplinary implications, especially those for entrepreneurship.

**SOC 311K** SOCIAL NETWORK THEORY & ENTREPRENEURIAL ACTIVITY IN SILICON VALLEY II
Designed for students who have already taken SOC/ANT 310K. It aims to deepen and extend skills in the same areas for which
310K was an introduction to social network theory and the new sociology of business and entrepreneurial activity.
Offered: Spring

**SOC 391** INDEPENDENT STUDY
Special work individually assigned, with the consent of the department.

**SOC 393** SENIOR PROJECT

**SOC 394** INTERNSHIP

**SP 101** ELEMENTARY SPANISH I
Intended for students with no background in Spanish, or whose background does not make placement in a higher-level Spanish
course advisable. Training in speaking, comprehension, reading and writing through classroom instruction and recitation periods.
Students must also register for the associated recitation section. Two or three exams; daily assignments.

**SP 102** ELEMENTARY SPANISH II
Spanish 102 continues the work of the beginning course Spanish 101. There is added emphasis on reading comprehension,
vocabulary building and culture. Students must also register for the associated recitation session. Two or three exams; daily
assignments.
Offered: Spring

**SP 113** INTENSIVE BEGINNING SPANISH
This 8-credit course is designed for students with little or no background in Spanish and the desire to acquire comprehensive
skills quickly. It offers intensive training in grammar, speaking, vocabulary building, oral comprehension, reading, and writing
skills and prepares students for intermediate-level study. Six weeks, M-F. Not open to students who have already taken SP 101 or
102.

**SP 151** INTERMEDIATE SPANISH I
Continuing study of modern Spanish in its spoken and written forms. Emphasis is given to cultural and literary readings and
discussions, as well as composition- writing skills and Multimedia Center activities. Two exams; several compositions and
rewrites.
Offered: Spring

**SP 152** INTERMEDIATE SPANISH II
Continuation of SP 151. Intended to advance conversational skills and refine writing skills through cultural and literary readings,
discussions, and Multimedia Center assignments. Two exams; several compositions and rewrites.
Offered: Spring
SP 153 INTENSIVE INTERMEDIATE SPANISH
SP 153 is an eight-credit, communication-based, intermediate-level Spanish language course that combines SP 151 and SP 152. Focus is on learning and review of vocabulary and grammatical structures, with emphasis on oral expression, listening comprehension, and on formal written skills. Also integrates skills related to cultural literacy. Students will revisit grammatical structures learned at the introductory level, and continue to develop meaningful and accurate communication skills. Class focuses on reading, writing, listening and oral practice with additional screening of films representative of Spanish and Spanish-American cultures for discussion. This intensive course is designed to advance communication skills (speaking, writing, reading, and listening) while working to build and expand vocabulary and cultural competence. Not open to students who have taken SP 151 or 152 already. Placement score determines eligibility.

SP 157 SPANISH IN...
Study Spanish conversation and culture abroad in a Spanish-Speaking country. (Ecuador, Mexico, or Spain) Program fee includes instruction at local language institute, family-stay and partial board, and excursions designed to complement the program’s special topic. Special application required.

SP 200 ADVANCED SPANISH COMPOSITION
This course is designed to refine the student's writing and reading skills in Spanish in preparation for entering upper-level Spanish courses. The class time and the assignments are divided between developing composition - writing skills, a variety of readings in Hispanic literature, and some review of grammatical structures. Two exams; four or five compositions and rewrites. Class taught in Spanish.

SP 202 THE FORGING OF A NATION: LITERARY IDEAS AND AESTHETICS FROM THE ROMANTICS TO DEMOCRATIC SPAIN
Explores the development of Spanish national identities reflected in and influenced by literary works from the early 19th century to the 21st. Symptomatic of transformations throughout Europe, Spain’s writers engage with a modernity that fitfully replaces the traditional social order. Their tools were the systems of knowing the world and of linguistic expression that would be forever changed by contradictions they saw around them. From the poetry of the Romantic period through the literature of the post-Franco era, literature in Spain is a register of cultural turmoil as well as desperate hope and expectation. Readings may include: Gustavo Adolfo Bécquer, José de Espronceda, Benito Pérez Galdós, Emilia Pardo Bazán, Miguel de Unamuno, José Ortega y Gasset, Federico García Lorca, Jacinto Benavente, Ana María Matute, Carmen Martín Gaite, Antonio Buero Vallejo, Rosa Montero, Paloma Pedrero, Bernardo Atxaga, and Mercè Rodoreda.

SP 203 ORIGINS AND EMPIRE
The course features early-modern Hispanic texts of Spain and Spanish America. It concentrates on the literature of the 16th and 17th centuries with works such as the Lazarillo de Tormes, the Novelas ejemplares of Cervantes and the poetry of Sor Juana Inés de la Cruz. Several papers in Spanish required. Class taught in Spanish.

SP 204 Coming to Terms: Spanish American Literature, from Tradition to Innovation
This course explores the multiple ways that intellectual debates in Spanish America have played out across literary texts from the 1800s to the twenty-first century. Independence from Spain, utopian societies, the value of European literary models, what it means to be modern, the rise of large cosmopolitan cities, autochthonous revolutions, dictatorship and post-dictatorship, the selling of the tropics, authenticity and subalternity, indigenous manifestoes, and experimental theater all respond to the burning questions put forth across Spanish America about its past, present, and future. How individual writers are inspired to respond will be our focus. Taught in Spanish.

SP 205 SPAIN: PAST, PRESENT AND FUTURE
This course explores selected topics from the early cultural life of the Iberian Peninsula to the burning issues of the 21st century. Topics vary from semester to semester but focus on changing notions of what it means to be “Spanish;” questions of cultural, religious, and ethnic inclusion and exclusion; the rise and fall of empire; Spain in America; war, peace, and reconciliation; terror at home; and Spain in the new Europe. Students will critique the myths, stereotypes, and realities of Spanish cultural identities as they examine representative examples of art, architecture, photography, music, sports, culinary arts, television, and film. Taught in Spanish.

SP 206 The Invention of Spanish America: From Colonial Subjects to Global Citizens
What was/is Spanish America? This course explores the processes of formation and transformation of the Spanish Americas from pre-Columbian and New World societies through the crucial issues of the globalized Americas today and tomorrow. Topics vary from semester to semester but focus on issues of language, ideology, national identity, race, class, gender, ethnicity, myths, customs and institutions as students examine the material products of folklore, music, the arts, architecture, film, popular culture. Questions of migration, diaspora, cultural hybridity, and modernity are addressed through texts and visual media. Taught in Spanish.

**SP 207 SPANISH IN SUMMER STUDY ABROAD**

Study Spanish conversation and culture abroad in a Spanish-Speaking country. (Ecuador, Mexico, or Spain) Program fee includes instruction at local language institute, family-stay and partial board, and excursions designed to complement the program’s special topic. Special application required.

**SP 211 CENSORSHIP**

**SP 215 DON QUIXOTE: BOOK, MYTH, IMAGE**

This course entails a close reading of the novel in English translation, coupled with a focus on the ways in which both the novel and/or protagonist have been adapted, adopted, interpreted or incorporated by various critical and popular traditions both inside and outside of Spain from the time of its original publication in 1605 through the 21st century. We will examine several filmic adaptations, illustrations and paintings as well, with an eye toward critically examining the problematic employment of Don Quixote as an icon of Pan-Hispanic culture. However, we will continually return to the novel as our anchor throughout the course, while assessing the constantly changing ways in which contemporary readers and scholars approach the text. Course is taught in English. *Students taking the course for Spanish credit will do the bulk of the work in Spanish*

**SP 218 SAINTS, SINNERS & SOVEREIGNS IN MEDIEVAL & EARLY MODERN SPAIN**

This course will study various literary, artistic, and historical representations in order to better understand how the discourses of religious and secular life shaped identity, politics, and cultural production in medieval and early modern Spain. We will explore the writing of those who would become saints (e.g. Teresa de Ávila and Juan de la Cruz) as well as texts that examine either the morality or amorality of the time period through characters like go-betweens or picaros. We will also investigate how various kings and queens (including The Catholic Monarchs, Carlos V, and Felipe II) are represented in portraits and how writers incorporated fictionalized versions of monarchs in their texts. Some themes which will help guide our discussion will include: gender, the saintly body, crime and punishment, the Spanish Inquisition, religious difference, and the burgeoning empire. A few short papers and/or exams, a longer research paper and a presentation will be the basis for evaluation. In Spanish.

**SP 249B STAGES OF RESISTANCE**

Description: This course studies the role of Spanish theater as a vehicle for the examination and critique of Spanish society in different stages of its history. Although the main focus of the class will be dramatic texts (la comedia, el auto sacramental, el entremes) from Spain's Golden Age, we will also examine representative examples of contemporary Spanish theater. We will discuss the role of the dramatic stage as a space for continually questioning and commenting on, among others, the construction of gender roles, politics, religion, sexuality and Spanish national identity. Some of the themes examined will be cross-dressing, the connection between "Church" and "State", censorship (by the Inquisition and the Franco regime) and theater post-Franco. Students will be exposed to basic theory on performance and to theatrical terminology. Authors will include: Félix Lope de Vega, Pedro Calderón de la Barca, Federico García Lorca and Paloma Pedrero. Class taught in Spanish.

**SP 249D BUNUEL, DALI, LORCA**

This course explores Surrealism and Spain, from the 1920s on, embedding cutting-edge works in broader questions of identity and possible threats to an emerging nation in a continent, a world, and an ethos caught between tradition and modernity. Includes films, art, essays, plays, poetry. Course taught in Spanish.

**SP 249M Out of the Wings: Contemporary Spain on Stage**

Dramatic and decisive political, social, and cultural changes in the late twentieth and early twenty-first century have been reflected in onstage experimentation and innovation by a variety of new Spanish playwrights. Tensions between progress, democracy, and modernity against the pull of the past are explored as Spain reconnects with Europe in a second transition into the new century. This course puts the theater of the absurd, the theater of the grotesque, and contemporary cutting-edge aesthetics in the limelight as well as the extraordinary flourishing of women dramatists over the past twenty years. Playwrights include José Ruibal, Fernando Arrabal, Carmen Resino, Juan Mayorga, José Luis Alonso de Santos, Jaime Salom, Paloma Pedrero,
Sergi Belbel and the Catalan theater of pain, Ana Diosdado, Laila Ripoll, Concha Romero, and Itziar Pascual. Course taught in Spanish. Students will practice segments of plays in class, and stage a one-act play at the end of the semester.

**SP 256 CONTEMPORARY SPANISH-AMERICAN PROSE**

Spanish-American fiction attained a new level of international recognition and a greatly expanded readership with the emergence of the “new narrative” and the so-called “Boom” of the 1960s. This course covers modern classics by authors such as María Luisa Bombal, Jorge Luis Borges, Juan Rulfo, Gabriel García Marquez, Carlos Fuentes, Luisa Valenzuela and Manuel Puig, as well as newer writers. Our study explores the works within their literary, cultural and social contexts. Several brief textual commentaries, two essays, two exams. Class taught in Spanish.

**SP 262B CUBA AT A CROSSROADS**

An enduring experiment in socialism, Cuba has long been part of global debate and expectation, both on the island and among Cuban diasporic communities. Academic inquiry has ranged from Havana as an architectural monument, to leadership after the Castro brothers, from the Buena Vista Social Club to tourism and international hotel chains like Meliá. This course examines historical framework, cultural mestizaje (influences of Europe, Latin America, and Africa), arts, and film to elicit conversations about the strategic island. Readings include José Martí, Cristina García, Fernández Retamar, Oscar Hijuelos, Senel Paz, Nicolás Guillén, Alejo Carpentier, Lezama Lima, Reinaldo Arenas, Cabrera Infante, Nancy Morejón. Taught in Spanish.

**SP 262F IDENTITY SIGNS: SPANISH-AMERICAN COMING OF AGE STORIES**

This course examines 20th-Century Spanish-American literary texts that represent the young person’s search for identity, self-knowledge and a place in an often hostile society. Factors such as nationality, social class, gender, race, ethnicity, disability and sexual orientation make this a dynamic process that is fraught with tensions and contradictions. Authors may include: Teresa de la Parra, María Luisa Bombal, José María Arguedas, Mario Vargas Llosa, Rosario Ferré, Isabel Allende, Elena Poniatowska, Reinaldo Arenas. Short essays, research term paper. Class taught in Spanish.

**SP 266 BRAZILIAN LIT AND CULTURE**

This course examines the intersection of written text and visual image—like the flip sides of a postcard—as mediated exchanges between visitor and addressee, as dramatized encounters, and as treasured material objects. We study a variety of prose writings, essays, photographs, and films related to geographical places in Spain as seen by insiders and outsiders. Methods and media of communication, cultural interaction and correspondence, undeliverable messages, and reading visual clues are some of the theoretical concerns we explore. Taught in Spanish. Students will create digital postcards as part of their semester’s projects. We will visit (digitally): Santiago de Compostela and the Camino de Santiago, Guernica, Barcelona, Madrid, Sevilla, and Granada.

**SP 266 MARX & FREUD IN LAT AMERICA**

Called by some “the capital of the 221st century,” Greater Mexico City is inhabited by close to 20 million people. The Distrito Federal (DF) and capital of Mexico is today the largest metropolitan area in the western hemisphere and third largest city in the world by population. Established by the Spanish in 1524 on the ruins of the Aztec city Tenochtitlán they had destroyed, Mexico City is a global center of finance, culture, and industry. This course examines the development of this vibrant megalopolis over
the 20th and 21st centuries using literature, film, politics, tourism, music and the arts, cultural geography, architectural space, and essays by urban wanderers to try and get a handle on a space that seems to contradict itself at every turn.

**SP 281 OTHER WORLDS & UNDERWORLDS**

This course focuses on opposing narrative forces: the fantasy of an ideal society and the underground terrain of mystery and crime. It is articulated around literary and cinematic visions of our own world, and of other worlds imagined as either utopias or, conversely, as frightening and undesirable dystopias. The authors’ and directors’ speculative futures may encompass real-world issues or take on entirely fictional characteristics. On the one hand, dehumanization, violence, environmental disaster, poverty, and fear may abound; on the other, science and technology, religion, libertarian socialism, or even androgyny may be optimistically embraced as hopes for humanity. Readings on both theory and practice of these genres include varieties of popular detective fiction from Spain and Spanish America. Also included are fantasy and science fiction novels, and film noir. Films, readings, and course in Spanish.

**SP 287A MEXICAN FILM**

This course explores both historical antecedents and contemporary visions. It includes films by directors such as Spanish exile Luis Bunuel, Alejandro Gonzalez Inarritu, Jaime Humberto Hermosillo, Alfonso Cuaron, Carlos Reygadas, Raul Ruiz, Maria Novaro, and other box office favorites. From Robert Rodriguez's Bedhead, to Desperado, Once Upon a Time in Mexico and, of course, Y tu mama tambien, Entre Pancho Villa y una mujer desnuda, and La ley de Herodes we explore images of Mexican culture. Course taught in English but work may be written in Spanish for Spanish credit.

**SP 288 SPANISH FILM**

Devoted to the critical analysis of recent Spanish cinema within its cultural contexts. Beginning with the early post–Civil War period, the focus is on film as the narrative representation of radical changes and transitions in Spanish society. Considers the translation of other media (literary, theatrical, etc.) into film and the problematic relationship between historical “reality” and the aesthetics of cinematic representation. Emphasis on films from the democratic transition to today. Includes films by directors such as Buñuel, Erice, Saura, Trueba, Garcia Sanchez, Almodovar, de la Iglesia, Amenabar. Class taught in English. Written work in Spanish for Spanish credit.

**SP 292 PHOTO IN SP & SP AMERICA**

**SP 390 SUPERVISED TEACHING**

**SP 391 INDEPENDENT STUDY**

**SP 392 PRACTICUM**

**SP 393 SENIOR PROJECT**

**SP 394 INTERNSHIP**

**SP 405 SPAIN: PAST, PRESENT, FUTURE**

This course explores the history of social and cultural development of modern Spain into the 21st century through a variety of media such as art, literature, and film. Topics range from the early cultural life of the peninsula to the implications of the Reconquista and from Spain's overseas empire to the Spanish Civil War, some emphasis on contemporary issues. Class taught in Spanish. Several papers, midterm exam. All written work in Spanish.

**SP 406 INVENTION SP AMERICA**

This course explores the ideas and events shaping the culture(s) of Spanish America, from pre-Columbian times to the present, with an emphasis on the concepts of discovery, conquest, mestizaje, and the formation of national cultural identity. Strong consideration will be given to contemporary issues. Texts will be drawn from literature, sociology, anthropology, history, the arts, and film. Several short essays, two exams. Class taught in Spanish.

**SP 418 SAINTS, SINNERS & SOVEREIGNS**
SP 449B STAGES OF RESISTANCE

SP 449D BUNUEL, DALI, LORCA
In the decades preceding the Civil War, Spanish avant gardes are represented by three larger-than-life figures: exiled film director Luis Buñuel, obsessed with the feminine, with his homeland and its supposedly eternal myths; Federico García Lorca, poet and playwright of Andalucía and its mythified past, assassinated on the eve of the conflict; and Salvador Dalí who lives the tenets of both Surrealism and capitalism in the flesh. Each leaves a legacy that extends beyond the borders of Spain and beyond the end of the twentieth century. This course explores Surrealism and Spain, from the 1920s on, embedding cutting-edge works in broader questions of identity and possible threats to an emerging nation in a continent, a world, and an ethos caught between tradition and modernity. Includes films, art, essays, plays, poetry. Course taught in Spanish.

SP 456 CONTEMP SPAN-AMER PROSE

SP 462 COLONIAL LATIN AMERICAN LIT
Topics vary from semester to semester. Possible topics include the confessional mode in Hispanic literature, surrealism and the avant-garde in art and Hispanic literature, Mexican literature, and other areas of interdisciplinary study. Class taught in Spanish.

SP 462B CUBA AT A CROSSROADS
Now that the twenty-first century has arrived, we cannot help but picture a Cuba “without Fidel.” But what does that mean? How do those in Cuba imagine their nation down the road? How does the Cuban community in Miami represent its hopes and dreams? This course examines art, film, and literary texts from the “homeland” and from the diaspora to compare and contrast images that negotiate between the past and the future. Course taught in English. Readings may be done in English or Spanish (for SP credit).

SP 462F IDENTITY SIGNS
This course will examine a variety of 20th-Century Spanish-American literary texts that represent the young person’s search for identity, self-knowledge and a place inn an often hostile society. Factors such as nationality, social class, gender, race, ethnicity and sexual orientation make this a dynamic process that is fraught with tensions and contradictions. Authors may include: María Luisa Bombal, José María Arguedas, Mario Vargas Llosa, Rosario Ferré, Nelson Estupinan Bass, José Augustín, Isabel Allende, Elena Poniatowska and Rosamaría Roffiel. This course will be taught in Spanish.

SP 466 BRAZILIAN LIT AND CULTURE

SP 470 HISPANIC SHORT STORY

SP 472 POSTCARDS FROM SPAIN

SP 475 MARX & FREUD IN LAT AMERICA

SP 477 MEXICO, DF: GLOBAL METRO
Called by some “the capital of the 221st century,” Greater Mexico City is inhabited by close to 20 million people. The Distrito Federal (DF) and capital of Mexico is today the largest metropolis in the western hemisphere and third largest city in the world by population. Established by the Spanish in 1524 on the ruins of the Aztec city Tenochtitlán they had destroyed, Mexico City is a global center of finance, culture, and industry. This course examines the development of this vibrant megalopolis over the 20th and 21st centuries using literature, film, politics, tourism, music and the arts, cultural geography, architectural space, and essays by urban wanderers to try and get a handle on a space that seems to contradict itself at every turn.

SP 481 OTHER WORLDS & UNDERWORLDS

SP 487A MEXICAN FILM
Visitors to Mexico already have Hollywood versions of the country in their heads, but the 'real' Mexico is a much more complex place. Archetypes of tough hombres, renegade outlaws, dark and sultry women, or beach bums lolling under the hot sun fall by the wayside when Mexican cinema introduces the grittier and much more varied realities of the contemporary nation. This course explores both historical antecedents and contemporary visions. It includes films by directors such as Spanish exile Luis Buñuel, Alejandro Gonzalez Inarritu, Jaime Humberto Hermosillo, Alfonso Cuaron, Carlos Reygadas, Raul Ruiz, Maria Novaro, and...
other box office favorites. From Robert Rodriguez's Bedhead, to Desperado, Once Upon a Time in Mexico and, of course, Y tu
mama tambien, Entre Pancho Villa y una mujer desnuda, and La ley de Herodes we explore images of Mexican culture. Course
taught in English but work may be written in Spanish for Spanish credit.

**SP 488 SPANISH FILM**

**SP 491 MASTER'S READNG COURSE IN SP**

**SP 492 PHOTO IN SP & SP AMERICA**

**SP 495 MASTER'S RESEARCH IN SP**

**SP 591 PHD READINGS**

**SP 895 CONT OF MASTER'S ENROLLMENT**

**SP 899 MASTER'S DISSERTATION**

**SP 985 LEAVE OF ABSENCE**

**STT 201 INTRODUCTION TO PROBABILITY**
Probability spaces, combinatorial problems, random variables and expectations, discrete and continuous distributions, generating
functions, independence and dependence, binomial, normal, and Poisson laws, laws of large numbers. Prerequisite: MTH 143 or
162. Same as MTH 201.

**STT 203 INTRODUCTION TO MATHEMATICAL STATISTICS**
Discrete and continuous probability distributions and their properties. Principle of statistical estimation and inference. Point and
interval estimation. Maximum likelihood method for estimation and inference. Tests of hypotheses and confidence intervals,
contingency tables, and related topics.
Offered: Spring

**STT 211 APPLIED STATISTICS FOR SOCIAL SCIENCES I**
Descriptive statistics, statistical analysis, and statistical inference as used in the social sciences; including elements of correlation,
regression, and analysis of variance. Excel, Minitab and similar programs. Please note that, because of the significant overlap
between them, students may earn degree credit for only one of these courses: BCS 200, CSP/PSI 211, STT 211 and STT 212.
Offered: Fall

**STT 212 APPLIED STATISTICS FOR THE BIOLOGICAL AND PHYSICAL SCIENCES I**
Descriptive statistics, statistical analysis, and statistical inference as used in the biological and physical sciences; including
elements of correlation, regression, and analysis of variance. Excel, Minitab and similar programs. Please note that, because of
the significant overlap between them, students may earn degree credit for only one of these courses: BCS 200, CSP/PSI 211, STT
211 and STT 212.
Offered: Fall Spring

**STT 213 ELEMENTS OF PROBABILITY & MATH STATISTICS**
Descriptive statistics; probability; binomial, Poisson, normal distributions; estimation of means, proportions, and their
differences; confidence limits; tests of hypotheses; chi-square tests of association; introduction to regression analysis.
Offered: Fall

**STT 214 BIOSTATISTICS**

**STT 214W BIOSTATISTICS WRITING**
STT 216 APPLIED STATISTICS II
Continuation of STT 211 or 212. Analysis of variance, regression, correlation contingency table analysis, and associated topics. Excel, Minitab and similar programs.
Offered: Spring

STT 221W SAMPLING TECHNIQUES
Simple random, stratified, systematic, and cluster sampling; estimation of the means, proportions, variance, and ratios of a finite population. Ratio and regression methods of estimation and the use of auxiliary information. The nonresponse problem. Prerequisite: familiarity with the concepts of expectation, variance, covariance and correlation.
Offered: Fall

STT 222 DESIGN OF EXPERIMENTS
Randomized blocks and Latin squares, one- and two-way classifications, factorial experiments, analysis of variance and covariance, t-tests and F-tests. Excel, Minitab and JMMP and SAS and similar programs.
Offered: Spring

STT 226W INTRODUCTION TO LINEAR MODELS
Simple linear, multiple, and polynomial regression methods and applications; ordinary and generalized least squares, estimation, tests of hypotheses, and confidence intervals, and simultaneous inference, and computer packages. Computer programs including JMP and SAS.
Offered: Fall

STT 241 APPLIED MULTIVARIATE ANALYSIS
Methodology and applications of multivariate analysis. Hotelling’s T-square, multivariate regression and analysis of variance. Classification and discrimination. Principal components, clustering, multidimensional scaling. Compute programs including JMP and SAS.
Offered: Fall

STT 277 INTRODUCTION TO STATISTICAL SOFTWARE AND EXPLORATORY DATA ANALYSIS
The first half of this course covers the elements of programming in R, SAS®, and operation of the JMP® graphical user interface. The student will learn how to get data into (and out of) these programs, execute fundamental statistical procedures, and write programs in R and SAS to document and automate analyses. The second half explores the use of this software to understand data from observational studies. The student will learn the philosophy, capabilities, and pitfalls of exploratory data analysis. Univariate, bivariate and multivariate methods will be introduced. Graphical methods will be emphasized, but numerically-oriented procedures such as linear models will be included where appropriate. Each student will analyze a real-life data set in some depth and write a report. Instructor permission required. Registration priority will be given to Statistics majors who will be taking the course in their senior year.
Offered: Fall

STT 390 SUPERVISED TEACHING

STT 391 INDEPENDENT STUDY

STT 391W INDEPENDENT STUDY

STT 392 PRACTICUM

STT 394 INTERNSHIP IN STT

STT 422 DESIGN OF EXPERIMENTS

STT 477 INTRO STATISTICAL SOFTWARE I
STT 591 PHD READINGS IN STAT
STT 595 PHD RESEARCH
STT 595A PHD RESEARCH IN ABSENTIA
STT 899 MASTER'S DISSERTATION
STT 999 DOCTORAL DISSERTATION
STT 999A DOCTORAL DISSERTATION IN ABSENTIA
TCS 412 HUMAN COMPUTER INTERACTION
TCS 440 DATA MINING
TCS 444 LOGICAL FOUNDATIONS OF A.I.
TCS 446 MACHINE LEARNING
TCS 447 NATURAL LANGUAGE PROCESSING
TCS 448 STAT SPEECH&LANG PROCESSING
TCS 449 MACHINE VISION
TCS 453 DYNAMIC LANG. & SOFT. DEV.
TCS 454 PROG LANGUAGE DESIGN & IMP.
TCS 455 SOFT ANALY & IMPROV
TCS 456 OPERATING SYSTEMS
TCS 457 COMPUTER NETWORKS
TCS 458 PARALLEL & DIST. SYSTEMS
TCS 461 DATABASE SYSTEMS
TCS 462 COMP INTRO TO STATISTICS
TCS 465 INTERMED STATISTICAL METHODS
TCS 473 COMP MODELS OF MUSIC
TCS 481 INTRO TO CRYPTOGRAPHY
TCS 483 TOPICS IN CRYPTOGRAPHY
TCS 484 ADVANCED ALGORITHMS
TCS 485 ALGORITHMS & ELECTIONS
TCS 486  COMPUTATIONAL COMPLEXITY
TEB 411  CELLULAR & MOLECULAR BIO FOUNDAT
TEB 418  INTRO TO NEUROENGINEERING
TEB 420  BIOMEDICAL NANOTECH
TEB 428  PHYSIOLOGICAL CONTROL SYSTEMS
TEB 442  MICROBIOENGINEERING
TEB 451  BIOMEDICAL ULTRASOUND
TEB 452  MED IMAGING-THEORY & IMPLEMENTATION
TEB 453  ULTRASOUND IMAGING
TEB 460  QUANTITATIVE PHYSIOLOGY
TEB 462  CELL & TISSUE ENGINEERING
TEB 470  BIOMEDICAL MICROSCOPY
TEB 483  BIOSOLID MECHANICS
TEC 413  ENGINEERING OF SOFT MATTER
TEC 430  ORGANIC ELECTRONICS
TEC 441  ADVANCED TRANSPORT PHENOMENON
TEC 447  LIQUID CRYSTAL OPTICS
TEC 454  INTERFACE ENGINEERING
TEC 458  ELECTROCHEMISTRY & FUEL CELL
TEC 460  SOLAR CELLS
TEC 464  BIOFUELS
TEC 465  BIOMASS CONVERSION
TEC 469  BIOTECHNOLOGY & BIOENGINEERING
TEC 482  PROC MICROELEC DEVICE
TEC 485  THERMODYNAMICS & STAT MECH
TEC 486  POLYMER SCIENCE & ENGINEERING
TEC 488  INTRO TO ENERGY SYSTEMS
TEE 401  ADVANCED COMPUTER ARCHITECTURE
TEE 404  MULTIPROCESSOR ARCH
TEE 405  ADV DIGITL DESIGN USING FPGA
TEE 406  GPU PAR PROG USING C/C++
TEE 407  ADVANCED GPU
TEE 423  SEMICONDUCTOR DEVICES
TEE 427  ELECTRIC POWER:CONV,TRAN,CON
TEE 432  ACOUSTICAL WAVES
TEE 433  MUSICAL ACOUSTICS
TEE 435  INTRO TO OPTO-ELECTRONICS
TEE 436  NANOPHOT/NANOMECH DEVICES
TEE 440  INTRO TO RANDOM PROCESSES
TEE 444  DIGITAL COMMUNICATIONS
TEE 445  WIRELESS COMMUNICATIONS
TEE 446  DIGITAL SIGNAL PROCESSING
TEE 447  DIGITAL IMAGE PROCESS
TEE 448  WIRELESS SENSOR NETWORKS
TEE 450  INFORMATION THEORY
TEE 452  MED IMAGING-THEORY & IMPLEMT
TEE 461  INTRO TO VLSI
TEE 462  ADVANCED CMOS VLSI DESIGN
TEE 463  VLSI ERROR CONTROL SYS
TEE 465  PERF ISSUES VLS/IC
TEE 466  RF AND MICROWAVE IC
TEE 467  ANALOG INTEGRATED CIRCUIT
TEE 468  ADV ANALOG CMOS
TEE 469  HIGH SPEED INTEGRATED ELECT
**TEE 471** COMP MODELS OF MUSIC

**TEE 472** AUDIO SIGNAL PROC

**TEE 475** AUDIO SOFTWARE DESIGN

**TEE 477** COMPUTER AUDITION

**TEE 479** AUDIO RECORDING TECH

**TEE 520** SPIN BASED ELECTRONICS

**TEM 401** ECONOMICS, MARKETING AND STRATEGY PRIMER FOR ENTREPRENEURS

This course presents fundamental concepts of microeconomics, marketing, and strategy to provide a foundation for understanding the economic marketplace and for identifying and assessing entrepreneurial opportunities. We begin with the study of consumer and firm behavior and the resulting demand and supply conditions in markets for goods and services. Using equilibrium analysis, we then investigate the determinants of market structure, prices, output levels, firm profitability, and consumer welfare when firms and consumers interact in the marketplace. Building on the economic model, we explore marketing issues, in particular the value proposition for new products and strategies for market entry, distribution, pricing and product positioning. Additional strategy topics include game theory and its managerial implications, incentive conflicts and contracts, and the relationship between government regulation and the business environment.

Offered: Fall

**TEM 402** ACCOUNTING AND FINANCE PRIMER FOR ENTREPRENEURS

This course is designed to present the fundamentals of financial accounting and analysis to enable participants to understand and use the principles of finance and accounting information to better structure business decisions. The accounting module will present skills required to interpret and analyze common financial statements, and evaluate a company’s past and potential future performance. Topics of discussion will include transaction analysis, cash vs. accrual accounting, financial statements and analysis, development of budgets and pro-forma statements, and depreciation and inventory methodologies. The financial module will present skills required to understand how companies make investment and financing decisions. Topics of discussion will include net present values, an intro to financial instruments, the tradeoff between risk and return in financial markets, capital budgeting and investment decision-making, choosing a capital structure, and using the weighted average cost of capital.

Offered: Fall

**TEM 411** GEN MANAGEMNT OF NEW VENTURE

This course provides an opportunity to examine the management practices associated with technical innovation and new business development. The analysis of entrepreneurship is evaluated primarily from the perspective of a start-up venture that requires equity capital investment. Management issues discussed include organizational development, analysis of market opportunities, market engagement, financial planning and control, capitalization, sources of funds, the due-diligence process and valuing the venture. Teams of three to four students will collaborate in the preparation of a business plan. The course will include time for students to share business ideas and identify possible team members. Each team will have a coach who is an experienced businessperson. The coach will be available to provide feedback to the team.

**TEM 440** SCREENING TECH OPPORTUNITIES

This course provides a process used to quickly assess the commercial merits of raw technologies. This course focuses on the very earliest stage of concepts where information is greatly lacking and the time and money to research such answers is also limited. Students, in group format, will select and “thicken” two technologies of interest. Thickening will involve a cursory evaluation based upon technical merit, early market indicators, human resource availability, and business challenges. Teams will use a template to present the results of their investigation to a panel. Teams must state whether or not each technology is worthy to bring forward into TEM 441 and TEM 411.

Offered: Fall

**TEM 441** PRODUCT DEV & TECH MGMT
In this class we will explore system engineering via the ISO9000 product development process and will illustrate how to use this process to develop both products and research systems that meet necessary specifications. The first eight weeks emphasize system integration including the development of the product development plans, partitioning of a system into subsystems, quantitative analysis of system performance and the role of prototypes. The second half of the semester emphasizes the planning needed to take systems to manufacture. During the course the students will prepare a product development plan on a project that was selected during TEM 440 Screening Technical Opportunities. The course is intended to be interactive. A portion of the classes will be dedicated to "brain-storming" solutions to technical problems and formal design reviews where the students will review the project plans of other students.

**TEM 483 BIOSOLID MECHANICS**

**TEM 491 MASTER'S READING**

**TEM 492 ENERGY SYSTEM ECON&MODELING**

One of the goals for the course is to introduce basic economic principles and methodologies necessary to evaluate the economics of various energy options. Students will learn the basics of energy systems modeling using Powersim Modeling software. Students will also be introduced to various modeling tools from Sandia National Lab and National Renewable Energy Lab (NREL) for evaluating economics of energy options. Students should expect to have discussion about what it will take economically, technically, and politically to increase the role of renewable technologies into our energy systems.

**TEM 494 INTERNSHIP**

**TEM 494P INTERNSHIP**

**TEM 890 SUMMER IN RESIDENCE - MA**

**TEM 897 MASTER'S DISSERTATION**

**TEM 897A MASTERS DISSERTATN ABSENTIA**

**TEM 899 MASTER'S DISSERTATION**

**TEO 412 QUANTUM MECHANICS - OPTICS**

**TEO 421 OPT PROPERTIES OF MATERIALS**

**TEO 424 FUNDAMENTALS OF LASERS**

**TEO 425 RADIATION & DETECTORS**

**TEO 428 OPTICAL COMMUN SYSTEMS**

**TEO 432 OPTO-MECHANICAL**

**TEO 441 GEOMETRICAL OPTICS**

**TEO 442 INSTRUMENTAL OPTICS**

**TEO 443 FABRICATION AND TESTING**

**TEO 444 LENS DESIGN**

**TEO 446 OPTICAL THIN FILM COATINGS**
TEO 447  ADVANCED THIN FILM COATINGS
TEO 448  VISION AND THE EYE
TEO 450  POLARIZATION
TEO 461  FOURIER OPTICS
TEO 462  ELECTROMAG WAVES
TEO 465  PRINCIPLES OF LASERS
TEO 467  NON-LINEAR OPTICS
TEO 468  WAVEGUIDES AND DEVICES
TEO 511  ADV MATH METHODS IN OPTICS
TME 408  PHASE TRANSFORMATION
TME 424  INTO ROBST DSGN QUAL ENG
TME 432  OPTO-MECHANICAL
TME 434  INTRO TO PLASMA PHYSICS I
TME 435  INTRO TO PLASMA PHYSICS II
TME 437  INCOMPRESSIBLE FLOW
TME 440  MECHANICS OF STRUCTURES
TME 441  FINITE ELEMENTS
TME 443  APPLIED VIBRATION ANALYSIS
TME 444  CONTINUUM MECHANICS
TME 445  PRECISION INSTRUMENT DESIGN
TME 453  INTRO TO NUCLEAR ENGINEERING
TME 458  NONLINEAR FINITE ELEM ANALYS
TME 460  THERMODYNMCS OF NANO&MICOSOL
TME 461  FRACTURE & ADHESION
TME 462  SOLIDS & MATERIALS LAB
TME 463  MICROSTRUCTURE
TME 466  CORROSION
TME 481 MECH BEHAVIOR OF SOLIDS

TME 536 HYDRODYNAMIC STABILITY

TUR 101 ELEMENTARY MODERN TURKISH I
An introduction to modern Turkish, including pronunciation vocabulary, grammar, elementary conversation, reading and writing.

TUR 102 ELEMENTARY MODERN TURKISH II

WRT 101 EAPP SPEAKING & LISTENING I
This course is designed to help undergraduate non-native speakers of English improve their English oral communication and listening skills in preparation for social interactions at the university. Students will practice speaking at greater length and faster speed by developing fluency, grammatical accuracy, complexity of sentence structures, and vocabulary. In addition, students will practice listening actively to peers, summarizing, paraphrasing, and repeating key information from native speakers of English. The course will also cover such techniques as asking follow-up questions, using socialization strategies, adapting to cultural differences, practicing small talk, and making formal and informal introductions. Class work will take place in and out of the classroom with the collaboration of native and non-native speakers of English in formal and informal settings. Significant class time will be devoted to English pronunciation.
Offered: Fall

WRT 102 EAPP SPEAKING & LISTENING II
This course builds upon the lessons from WRT 101: ESOL Speaking and Listening I, and it is designed to help undergraduate non-native speakers of English improve their English oral communication and listening skills in preparation for academic and social interactions. Students will practice taking notes, summarizing, repeating, and critiquing key information from recorded lectures and presentations – with an emphasis on the discourse most prevalent in undergraduate university courses. Students will also practice communicating in different academic, social, and cultural contexts as they engage in classroom conversation, debates, interviews, speaking to formal audiences, and giving academic presentations in English. Class work will take place in and out of the classroom with the collaboration of native and non-native speakers of English in formal and informal settings.
Offered: Spring

WRT 103 ESOL Critical Reading, Reasoning, and Writing
WRT 103 is an introduction to critical reading and writing skills. Lessons will center on the analysis of varied readings and on using writing as a tool for critical thinking and reflection. Students will be introduced to concepts of rhetorical analysis and the use of logic, as well as the roles of audience and purpose in shaping the organization, style and argumentative strategies of their own papers. In addition, students will build writing fluency and self-expression through freewriting and in-class writing. Collaboration is an important part of learning; therefore, students will work together as they learn to critique their own work and the work of their peers. Attention will be given to writing beyond the classroom, such as communicating with faculty and others campus programs and departments.
Offered: Fall

WRT 104 ESOL Research, Reading, and Writing
WRT 104 extends the critical reading and writing skills learned in WRT 103: ESOL Critical Reading, Reasoning, and Writing to the act of research. Research may include traditional library sources and academic journals, but it may also include primary research such as fieldwork, surveys, and interviews. A variety of texts will be analyzed and discussed in preparation for constructing extended argumentative essays and a final research paper. Reading and responding critically to texts will be practiced. Students will learn to incorporate source material into research writing and integrate one’s ideas with those from other texts. Collaboration is an important part of learning; therefore, students will work together as they learn to critique their work and the work of peers. Attention will be given to writing beyond the classroom, such as communicating with faculty and other campus programs and departments.
Offered: Spring

WRT 105 REASONING AND WRITING IN THE COLLEGE
Introduces disciplinary writing at the college level by offering instruction in small sections that focus on the act of writing. Provides instruction and practice in clear and effective writing and in constructing cogent and compelling arguments, as students
draft and revise numerous papers of different forms and lengths. These papers introduce some of the forms of writing students are expected to produce later in their college careers as well as in their public and professional lives after graduation. The subject of the course is writing, but since writing is about something, each section presents various texts, mostly written, for analysis and discussion in preparation for constructing extended argumentative essays in a final research paper. Students consider the roles of audience and purpose in shaping the organization, style, and argumentative strategies of their own papers, while they learn to become critical readers of their writing through peer critiques and revision/editing workshops.

Offered: Fall Spring Summer

WRT 105A MURDER, MYSTERY & METHOD

WRT 105E REASONING AND WRITING IN THE COLLEGE

WRT 105E is an extended version of Reasoning and Writing in the College. While WRT 105 and WRT 105E have the same demands and criteria for completion, WRT 105E is intended for students who decide that they need a more supported writing experience to meet the demands of college writing. All sections of WRT 105E include an additional class session each week and are taught in computer labs and limited to 10 students. WRT 105E students who have worked diligently but have not attained a C or above may take an incomplete and sign up for the WRT 105E Extension, a weekly workshop and tutorial that allows students to raise their final grades and satisfy the Primary Writing Requirement.

Offered: Fall Spring

WRT 108 WORKSHOP IN WRITING

Offers ongoing practice and instruction in writing and critiquing writing. Students meet weekly with a writing center consultant to work on forms of academic writing relevant to their spring coursework. These forms may include summaries, critical responses, argumentative essays, and lab reports, among others. Students may also choose to revise essays completed in previous semesters or work on other non-fiction projects. Guided by a writing center consultant, students plan, draft and revise their writing, critique each other's work, assess their own writing, and participate in group session on common writing issues. The semester's work will culminate in a final portfolio that features polished essays and an overall self-assessment.

Offered: Spring

WRT 245 ADV WRITING & PEER TUTORING

Prepares sophomores, juniors, and seniors enrolled in five-year programs, from the humanities, sciences, and the social sciences for work as writing fellows. Course design facilitates the development of a strong, intuitive writer and speaker in order to become a successful reader, listener and responder in peer-tutoring situations. Ample writing and rewriting experiences, practice in informal and formal speaking, and the critical reading of published essays and student work enhance students' ability to become conscious, flexible communicators. Before tutoring on their own, students observe writing fellows and writing center consultants conduct tutoring sessions. On completion of the course with a B or better, fellows should be prepared to accept their own hours as peer tutors.

Offered: Fall

WRT 246 SPKN COMM&PEER TTRNG

WRT 247 SPOKEN COMMUNICATION TUTORING

WRT 250 MODERN ENGLISH GRAMMAR

WRT 261 WRITING IN A DIGITAL WORLD

WRT 272 Developing a Professional Biology Writing Portfolio

After completing a Biology degree, many people apply to graduate or medical school, become laboratory technicians, or do work that in some way describes science to non-scientists. These options all require writing, although the particulars vary. In this class, students will complete short writing assignments that tailor information about a single topic to different audiences. They will then identify the area(s) where they would like to concentrate their efforts, and write and revise at least one significant piece of scientific writing. More than one piece may be required; the final project should contain 10-15 pages of writing (split as desired between projects). This course satisfies one of your two required upper-level writing experiences. It is a half-semester course,
meeting once weekly. There will be significant out-of-class time commitment required for writing, revision, self-assessment, and peer-review.

Offered: Spring

**WRT 273 COMMNCTNG YOUR PROF IDENTITY**

**WRT 274 COMM YOUR PROF PSYCH ID**

**WRT 391 INDEPENDENT STUDY**

**WRT 396 RESRCH PAPER WRITING IN BIO**
Invites native or near-native speakers of English to serve as TAs in WRT 101, ESOL Speaking & Listening I. TAs will participate and lead in small group discussions assisting ESOL students with their learning and class projects. The objective of this course is for classroom partners to create a fun, social, academic atmosphere in which ESOL students can improve their English speaking and listening skills, make friends, and share cultural knowledge. Any University of Rochester undergraduate student with an interest in education, international relations, and teaching English to international students may apply for this course. This course meets once a week, and TAs are expected to maintain professionalism and come to class prepared for the daily lessons. Instructor’s permission is required to enroll in this course.

Offered: Fall

**WRT 571 WRITING PEDAGOGY**

**WRT 572 PRACTICUM IN TEACHING OF WRITING**

Offered: Spring

**WST 100 INTRO TO WOMEN'S STUDIES**
The study of women and gender through specific topics that change each semester.

Offered: Fall Spring

**WST 101 DEVELOPING FROM WITHIN**

**WST 103 LANGUAGE & SEXUALITY**
This course will investigate various aspects of language as used by members of sexual minority groups, focusing on language of and about gay men, lesbians, bisexuals and transgendered people, including "reclaimed epithets" (e.g., ‘dyke’ and ‘queer’), gender vs. sexuality vs. sex, and the role of language in creating/maintaining sexual categories and identities.

**WST 105 SEX AND POWER**

**WST 115 INTRO TO MED ANTHROPOLOGY**
Exploration of anthropological interpretation, research, and writing on the ways different peoples understand and deal with issues of illness and disease.

**WST 123 INTRO TO VISUAL&CULTURL STDS**
The aim of this course is two-fold: First, to develop an understanding of the extraordinary variety of ways meaning is produced in visual culture; secondly, to enable students to analyze and describe the social, political and cultural effects of these meanings. By studying examples drawn from contemporary art, film, television, digital culture, and advertising we will learn techniques of analysis developed in response to specific media and also how to cross-pollinate techniques of analysis in order to gain greater understanding of the complexity of our visual world. Grades are based on response papers, class attendance and participation, and a midterm and a final paper. Occasional film screenings will be scheduled as necessary in the course of the semester.

**WST 155 INTRO TO AFRICAN-AMER LIT**

**WST 178 RELIGION,FOOD&EATING IN AMER**
**WST 189** SEXUALITY IN WORLD RELIGION

**WST 190** MDL EASTERN DANCE FOLKLRIC
Traditional Folkloric roots of Middle Eastern Dance, focusing on specific Bedouin dance styles of North Africa (Raks Shaabi). Discourse and research will address issues of gender and body image. Improving strength, flexibility and self-awareness of the body, the class work will include meditative movement, dance technique, choreography and improvisation. No prior dance experience necessary.

**WST 193** MID EASTERN DANCE: ORIENTALE
Improve strength, flexibility and self-awareness of the body. Includes meditative movement, dance technique, improvisation and rhythm identification through music and drumming. Dance forms such as Egyptian, Turkish, and American Tribal will be taught. Traditional costuming will be addressed. History, art, and culture from these countries will be explored and experienced. Discourse and research topics will explore issues of gender, body image, historical perspectives and Orientalism.

**WST 200** COLLOQUIUM IN WOMENS STUDIES

**WST 200W** COLLOQUIUM IN WOMENS STUDIES
The diversity of feminist thought and practice in its importance in forming Women's Studies, in its impact on other disciplines, and in its articulation with lives and social practices.
Offered: Spring

**WST 201** SUSAN B. ANTHONY AND HER WORLD
The course provides an in-depth study of Susan B. Anthony and the world in which she lived. In addition to focusing on the major political issues that occupied Anthony and her coworkers—women’s rights, abolition, and temperance—the class will explore the social and cultural world of America during the century between Anthony’s birth (1820) and the adoption of the 19th Amendment (1920), with special emphasis on American musical life during this time. The seminar-style course will incorporate in-class presentations and discussion, field trips, and writing assignments ranging from short response papers to a final research paper. No prerequisite. Meets the writing intensive requirement.

**WST 204F** FEMINIST FILM THEORY

**WST 205** PHIL FOUNDATION OF FEMINISM
Contemporary feminist theory: the conception of women expressed through our practices, laws, theories and literature; equality and equal rights; sex roles and gender specific language; power relations and self-determination; marriage and maternity.

**WST 206** FEMINISM, GENDER & HEALTH
This course explores how ideas about gender and sex have shaped past and present approaches to health and medicine. We will consider the effects gender, race, and class have had on medical knowledge and practices, with particular emphasis on women’s bodies and women’s health. Topics will include the social and cultural constructions of gender, the politics of human sexuality, women’s interventions in the fields of health and medicine, and reproductive politics. This is a writing-intensive course and may be counted toward the University of Rochester’s Women’s Studies major, minor, or cluster.
Offered: Spring

**WST 207** CARNAL SPEAKING: MIDDLE ENG
Varying topics relating to the literature and culture of the Middle Ages.

**WST 209** HUMAN SEXUALITY
The question of difference will be approached in this seminar through the narrow lens of what has come to be called "queer theory." A select number of foundational texts, including Foucault's History of Sexuality and Freud's Three Essays, will lay the groundwork for analysis of recent theorists working within the domains of psychoanalysis and new historicism. Students will lead seminar discussions on theoretical texts of their choosing.

**WST 210** LGBTQ EXPERIENCES US HISTORY
This course will explore the historical, social, and cultural experiences of Lesbian, Bisexual, Gay, Transgender, and Queer communities and individuals in America. We will focus on intersectional identities, historical events, activist movements, legal issues, and cultural trends in American LGBTQ history.

Offered: Fall

**WST 212 QUEER THEORY**

Queer Theory emerged out of the intersection of conceptualizations of gender/sexuality advanced by feminist scholars, early LGBT scholarship, and theories of postmodernism. Queer theory has not only attempted to recuperate non-dominant sexualities, but perhaps more tellingly, has sought to deconstruct the assumed correlation between sex, gender, and sexuality. In other words, what ought we to do with bodies that do not conform to binary gender norms? How might we understand sexuality if it is a contingent practice with open-ended objects? In what ways can we understand the embodiments of gender/sexuality as a “performance”? How have queer identities been informed by other socially significant forms of identity (such as: race, class, gender, nationality, etc)?

**WST 214 IMPRESS & POST IMPRESS**

Feminist art historians have changed the way we think about images of women, works by women artists, and the very notion of artistic genius. This course will investigate the way in which visual images of women participate with other cultural and social factors in the construction of the idea of woman. It will look at types and conventions in works by male and female artists, as well as anonymous prints and advertising from different periods, with a concentration on the 19th and 20th centuries. Readings will introduce a variety of approaches.

**WST 216 RESTORATION & 18TH-C DRAMA**

**WST 219 The Politics of Sport**

Athletic competitions are not just spectacles that celebrate physical strength and human endurance, but also important symbolic events that serve to reinforce and challenge ideas about gender, race, and national identity. This course explores the origins of stereotypes that permeate sports (such as notions of masculine prowess; women’s natural weakness; ethnic and racial limitations and advantages), reasons for their persistence, and the effect they have on our society and the unequal relationship of power. Topics will include the history of the Olympic Games (the Berlin, Mexico City, and Beijing Olympics); the roles of soccer, football, and other sports in shaping national identities; sport, racism, and resistance; sport and sexualization/empowerment of women; sport and masculinity; persistent heteronormalcy of sport, and many others.

Offered: Fall

**WST 219W THE POLITICS OF SPORT**

Athletic competitions are not just spectacles that celebrate physical strength and human endurance, but also important symbolic events that serve to reinforce and challenge ideas about gender, race, and national identity. This course explores the origins of stereotypes that permeate sports (such as notions of masculine prowess; women’s natural weakness; ethnic and racial limitations and advantages), reasons for their persistence, and the effect they have on our society and the unequal relationship of power. Topics will include the history of the Olympic Games (the Berlin, Mexico City, and Beijing Olympics); the roles of soccer, football, and other sports in shaping national identities; sport, racism, and resistance; sport and sexualization/empowerment of women; sport and masculinity; persistent heteronormalcy of sport, and many others.

**WST 223 MADNESS, MARRIAGE & MONSTROSITY**

Varying topics relating to the literature and culture of England in the nineteenth century.

**WST 228 BODY IN EARLY CHRISTIANITY**

**WST 229 WAR AND MIGRATION**

Post-1945 migrations to the U.S. through the lens of war. Far-ranging impacts of American military intervention in East and Southeast Asia on migration flows and the civil rights of American citizens of Asian descent.

**WST 230 NARRATIVES OF SLAVERY**

**WST 231 GENDER & DEVELOPMENT**
WST 233 RACE IN AMERICAN FICTION

WST 237 MEDIEVAL CELTIC STUDIES

WST 238 ALL IS FAIR IN LOVE AND WAR

WST 239 JEWISH WOMEN'S WRITING

WST 240 WRITING WOMEN'S LIVES

In this course we shall examine women's lives through the act of non-fiction writing. Focusing on prose writing (rather than poetry), each student will actively practice the creative act of telling the truth about her own and other women's lives. We shall also read many diverse examples of women's autobiographical writing and other non-fiction genres, by such acclaimed practitioners as Virginia Woolf, bell hooks, Alice Walker, Annie Dillard, Dorothy Allison, and Maxine Hong Kingston.

WST 241 MUS ETHNOGRAPHY & HIV

WST 242 DANCE THERAPY FOUNDATIONS

WST 243 MAJOR AUTHOR: TONI MORRISON

Intensive study of the writings of a single author or small group of authors from British or American literary traditions.

WST 245 CONTEMPORARY AMERICAN MEMOIR

WST 246 ANT APP GENDER/SEXUALITY

WST 248 WOMEN IN LAW: DEF, PRAC&VIC

WST 249 WOMEN ACTIVISM SOCIAL CHANGE

WST 250 BLACK PARIS

This course is a study of Black Paris, as imagined by three generations of Black cultural producers from the United States, the Caribbean and Africa. Paris is as a space of freedom and artistic glory that African American writers, soldiers and artists were denied back home. For colonized fricans, and Antilleans, Paris was the birthace of the Negritude, the cultural renaissance informed by the dreams and teachings of the Harlem Renaissance. Black Paris, for the young generations caught in the marginal space of poor suburbs, calls to mind images of burning cars, riots, dilapidated schools that are rendered through rap music, hip-hop that are weaving the thread of a new youth-oriented transnational imagination.

WST 253 GENDER & LANG LIT FILM & SOC

WST 254 MONSTROUS FEMININE MID AGES

WST 260 RACE & GENDER IN POP FILM

This course explores Hollywood's current fascination with race and gender as social issues and spectacles. In particular, we will focus on the ways that social difference have become the sites of increasingly conflicted narrative and visual interactions in our films. To examine competing representations of racial difference and sexual difference in contemporary US culture, we analyze popular films of the 1980s and 1990s, from thrillers to action films to comedies.

WST 263 FASSBINDER

WST 265 ISSUES FILM: FAMILY REPRSSION

The course takes up particular concepts, ideas, and ideology in film, often spanning periods, nations, and genres.

WST 266 PSYCHOLOGY OF GENDER
Exploration of the ways males and females differ in interaction, theories of development of sex differences, consequences for social change.

**WST 267 CHANGING GENRES OF EROTICA**

**WST 268 CONTEMPORARY JPN CULTURE**

Issues of contemporary concern in Japan, including national, ethnic and racial identity; changing gender and sex roles; the family and generational conflict; immigration and work; the emperor system, war, and memory; cultural authenticity; and Japan's changing roles in Asia and in the world.

**WST 269 FILM: THE MATTER WITH MEN**

**WST 270 JAPAN’S FLOATING WORLD**

This century's major periods of social and political upheaval in Spanish America are well documented by a variety of texts that claim to tell the truth about historical events. Many of these texts acquire the status of "literature" and not mere "reporting." This course will ask the following questions: How have Spanish American writers constructed factual, truth-telling texts? What impact has photography had on the writing of nonfiction? What expectations do we as readers bring to documentary literature? How are the lines drawn -- and blurred -- between factual and fictional discourses? Readings will be chosen to represent revolutionary Mexico, labor struggles of the 1920s, revolutionary Cuba, the repression in the Southern Cone, the Central American insurgencies, and the survival of indigenous cultures. Short essays; research term paper. Class taught in English.

**WST 272 GENDER & SEX IN 20TH CENTURY**

This course will examine literary, artistic, and theoretical representations of gender and sexuality as they have changed in the course of the 20 Century. The focus will be on texts from Western Europe and the US, but we will also consider other perspectives. From the New Women to French Feminists and transnational feminism. From homophile societies to "queer nation and gay marriage, from Sigmund Freud to Michel Foucault and Judith Butler, we will explore the contested and politically charged debates around gender and sexuality that have shaped our views of identity over the last century.

**WST 277 PROGRESS AMER**

**WST 278 BIRTH&DEATHII: MKG POP HLTHY**

Programs carried out by governments, multilateral organizations, and non governmental organizations to deal with "public problems" connected to population: communicable diseases such as TB, malaria and HIV/AIDS; famine prevention and relief; child survival, especially malnutrition and infant diarrheal disease; safe motherhood; teen pregnancy; contraception, and abortion.

**WST 283 ORALITY, LANGUAGE & LITERACY**

An inquiry into how literacy capability at different historical moments has affected the uses of texts, performances, and speech genres. Attention is given to literary, sacred, and secular texts.

**WST 285 HISTORY OF THE BODY**

**WST 288 MOTHERS, COMRADES & WHORES**

It is common now to hear that we live in a transnational age, but what does this really mean? How do we imagine our transnational community? In this course we will examine contemporary transformations from national to trans-national culture by focusing precisely on film production. This course will examine how film provides one of the central sources of transnational images. Germany will provide us with a case study and we will view a wide variety of German and European, national and transnational films. Through this case study we will address larger questions of globalization. Through hot new cult films like "Run, Lola Run," or big budget epics like "House of the Spirits," we will examine the aesthetic and technical transformations that have given rise to these new ways of imagining our community. PLEASE NOTE: Attendance at weekly film screening is mandatory -- alternative time will be set up.

**WST 290 LGBTQ ISSUES ED/HUM DEVELPMN**
**WST 292** INTRO TO EAST EURO FILM

**WST 296** INTL HUMAN RIGHTS
What does it mean to be human? What political, economic, religious, social, or sexual rights might be part of different people’s working definitions? This course will look at both a) the historical development of conflicting theories of human rights and b) more contemporary debates about their ideal extent, their exercise, and their enforcement. Special topics will include debates over the meaning of the American and French Revolutions, the fight to design an International Declaration of Human Rights in the aftermath of World War II, the history of organizations such as Amnesty International, and the controversy around UN events such as the 1995 World Conference on Women in Beijing, the 2002 World Summit on Sustainable Development in Rio de Janeiro, and the 2000 and 2005 Millennium Summits in New York City.

**WST 350** BLACK FAM IN SLAVE AND FREE
After a discussion of the Moynihan Report controversy and an assessment of the literature on the black family, the readings will investigate why and how stable black families were encouraged, and how they developed under slavery. The impact of factors such as economics, politics, religion, gender, medicine, and the proximity of free families, on the structure of the black family will be given special attention. In this way, the structure of the slave family on the eve of Emancipation, and its preparedness for freedom, will be tested and assessed. Students will be encouraged to identify persistent links between the “history” of slavery and the black family, and the development of social policy.

**WST 351** TOP CONT ART & CRIT: WARHOL

**WST 379** ASSIMILATING LITERARY LANG

**WST 381** GNDR&SEXUALITY AMRCAN CINEMA

**WST 389** PROBS OF WESTERN CIVILIZATION
Advanced seminars focus on a particular body of works (literary or cinematic), a special research topic, or a particular critical or theoretical issue. One or more extended critical essays will be required.

**WST 391** INDEPENDENT STUDY
Students interested in Independent Studies should contact the Women's Studies Department.
Offered: Fall Spring

**WST 392** PRACTICUM IN WOMEN'S STUDIES
Interested students should contact the Women's Studies Department.

**WST 393** SENIOR PROJECT
Independent research with substantial supervised research and written work in gender and women's studies. This research should be directed toward work in WST 397.

**WST 393H** HONORS-INDEPENDENT RESEARCH
Independent research with substantial supervised research and written work in gender and women's studies. This research should be directed toward work in WST 397.

**WST 394** INTERNSHIP
It is the student's responsibility to arrange the internship with the organization and to find a professor as an advisor for the internship. Organization/Companies currently offering internships are Afterimage, Alternatives for Battered Women, Center for Dispute Settlement, City Council of Rochester, Division of Human Rights, Gay Alliance of Genesee Valley, Monroe Districts Attorney's Office, Planned Parenthood, St. Joseph's Villa, Sojourner House, Susan B. Anthony House, TV Dinner/Metro Justice, Urban League of Rochester, Visual Studies Workshop, Wheatley Library Branch and the YWCA. Position descriptions are available in Lattimore 538.

**WST 395** INDEPENDENT RESEARCH
Independent research with substantial supervised research and written work in gender and women's studies.

**WST 395W INDEPENDENT RESEARCH**

**WST 396 SEMINAR IN WOMEN'S STUDIES**
Juniors and seniors only or prerequisite course in African American Literature, American Literature or Women's Studies. Interested students should contact the Women's Studies Department.

**WST 397 INDEPENDENT HONORS THESIS**
Open only to senior majors or by permission of instructor. Honors in Research recognizes the completion of a distinguished thesis, research paper of approximately 35 pages researched and written under the direction of the faculty advisor, and approved by the faculty advisor and second reader. It is expected that this thesis will be based on research undertaken through WST 393H and WST 394H, and completed in WST 397.

**WST 404 FEMINIST FILM THEORY**

**WST 407 CARNAL SPEAKING: MIDDLE ENG**

**WST 416 RESTORATION & 18TH-C DRAMA**

**WST 423 MADNESS, MARRIAGE & MONSTROSITY**

**WST 433 RACE IN AMERICAN FICTION**

**WST 443 MAJOR AUTHORS: TONI MORRISON**
Intensive study of the writings of a single author or small group of authors from British or American literary traditions.

**WST 445 CONTEMPORARY AMERICAN MEMOIR**

**WST 446 JANE AUSTEN & CONTEMPORARIES**

**WST 453 GENDER & LANG LIT FILM & SOC**

**WST 454 MONSTROUS FEMININE MID AGES**

**WST 467 CHANGING GENRES OF EROTICA**

**WST 468 CONTEMPORARY JPN CULTURE**
Issues of contemporary concern in Japan, including national, ethnic and racial identity; changing gender and sex roles; the family and generational conflict; immigration and work; the emperor system, war, and memory; cultural authenticity; and Japan's changing roles in Asia and in the world.

**WST 483 ORALITY, LANGUAGE & LITERACY**
An inquiry into how literacy capability at different historical moments has affected the uses of texts, performances, and speech genres. Attention is given to literary, sacred, and secular texts.

**WST 496 INTL HUMAN RIGHTS**
What does it mean to be human? What political, economic, religious, social, or sexual rights might be part of different people's working definitions? This course will look at both a) the historical development of conflicting theories of human rights and b) more contemporary debates about their ideal extent, their exercise, and their enforcement. Special topics will include debates over the meaning of the American and French Revolutions, the fight to design an International Declaration of Human Rights in the aftermath of World War II, the history of organizations such as Amnesty International, and the controversy around UN
events such as the 1995 World Conference on Women in Beijing, the 2002 World Summit on Sustainable Development in Rio de Janeiro, and the 2000 and 2005 Millennium Summits in New York City.

**WST 591 INDEPENDENT STUDY**

Students interested in Independent Studies should contact the Women's Studies Department.