Auditor Only Series

ASC-001 CAP at McCarter - The Niceties
Instructor: Debbie Bisno, Producer, Eleanor Burgess, Playwright, and Kimberly Senior, Director

Description: This winter, McCarter is featuring on its main stage an explosive world premiere, The Niceties, by Eleanor Burgess (in association with Manhattan Theater Club and The Huntington Theater). This features unprecedented access to the artists and producers creating new work for the stage. Read the script, see the play, go behind the scenes from multiple vantage points - from playwright to producer - with this case study class designed to provide theater lovers and curious seekers with a true insider's view of the life of a theater artist and the process of bringing a timely and provocative new play to life.

About the Play: Race. History. Power. Zoe, a black student at an Ivy League University, is called into her white professor's office to discuss her thesis about slavery's effect on the American Revolution. In this riveting 2-person drama, a polite clash in perspectives explodes into an urgent and dangerous contemporary debate.

Dates: Wednesday's - January 9, 23, and 30, 2019
Time: 2:30 pm - 4:00 pm  W

Performance date: January 16, 2019
Show Time: 7:30 pm

Tuition: $175 This class will include 3 classroom sessions and one performance. The performance ticket is included in the class fee.

ASC-002 Animal Behavior
Instructor: James Gould, Professor Emeritus, Ecology and Evolutionary Biology

Description: Animal behavior is the ultimate branch of biology: the body and brain, respiration and circulation, muscles and neurons, all exist simply to build and program animals to pass their genes into the next generation. The goal of ethologists is to reverse engineer that programming. The course will begin with the most basic behavioral instructions -- instincts -- showing how ethologists used charmingly simple experiments to decode the “algorithms” underlying offspring care, communication, animal architecture, and navigation. We will then look at how innately directed learning extracts cause-and-effect patterns from the animal’s world, thus broadening the scope and flexibility of adaptive behavior. This leads us to the controversial questions of animal cognition, planning, and insight. These three processes -- instinct, learning, and (perhaps) thought -- combine to guide decision making, the most crucial example of which is choosing a mate. Finally, we will try to apply the lessons of ethology to our own species, attempting to infer the nature of our own unconscious programming.

Schedule: Friday’s - March 29, April 5, 12, and 29, 2019
Time: 10:00 am - 11:30 am  F

Tuition: $100
DEPARTMENT OF
AFRICAN AMERICAN
STUDIES

AAS 235 Race Is Socially
Constructed: Now What?
Professor: Ruha Benjamin

Description: The truism that "race is
socially constructed" hides more than it
reveals. Have Irish Americans always
been white? Are people of African
descent all black? Is calling Asian
Americans a "model minority" a
compliment? Does race impact who we
date or marry? In this course, students
develop a sophisticated conceptual
toolkit to make sense of such
contentious cases of racial vision and
division as the uprising in Ferguson. We
learn to connect contemporary events to
historical processes, and individual
experiences to institutional policies,
exercising a sociological imagination
with the potential to not only analyze,
but transform the status quo.

Schedule: 01:30 pm - 03:20 pm T

AAS 313 Modern Caribbean History
Professor: Reena N. Goldthree

Description: This course will explore
the major issues that have shaped the
Caribbean since 1791, including:
colonialism and revolution, slavery and
abolition, migration and diaspora,
economic inequality, and racial
hierarchy. We will examine the
Caribbean through a comparative
approach--thinking across national and
linguistic boundaries--with a focus on
Cuba, Jamaica, Puerto Rico, Haiti, and
the Dominican Republic. While our
readings and discussions will
foreground the islands of the Greater
Antilles, we will also consider relevant
depictions from the circum-Caribbean
and the Caribbean diaspora as points of
comparison.

Other information: Students will be
asked to watch 3-4 films during the
semester.

Schedule: 10:00 am - 10:50 am M W

AAS 366 African American History
to 1863
Professor: Tera W. Hunter

Description: This course explores
African-American history from the
Atlantic slave trade up to the Civil War.
It is centrally concerned with the rise of
and overthrow of human bondage and
how they shaped the modern world.
Africans were central to the largest and
most profitable forced migration in
world history. They shaped new
identities and influenced the contours of
American politics, law, economics,
culture and society. The course
considers the diversity of experiences in
this formative period of nation-making.
Race, class, gender, region, religion,
labor, and resistance animate important
themes in the course.

Schedule: 11:00 am - 11:50 am T Th

PROGRAM IN AMERICAN
STUDIES

AMS 101 America Then and Now
Professors: Rachael Z. DeLue,
Bernadette J. Perez, Sarah Rivett

Description: This course introduces
students to the subjects of American
Studies through discussion of some of
the signature ideas, events, and debates
in America's past and present in order to
understand America as it exists today. It
examines both historical and mythic
manifestations of America from local,
national, and global perspectives and
considers the historical and cognitive
processes associated with the
delineation of America. The course
examines a wide range of material and
media from the point of view of multiple fields of study, and it engages the voices of diverse individuals and cultures in telling the story of America then and now.

**Schedule:** 01:30 pm - 02:50 pm M

**AMS 390 American Legal Thought**

**Professor:** Hendrik A. Hartog

**Description:** This course surveys American legal thought and the practices of American lawyers. Along the way, it questions the notion of distinctive "schools," as well as the distinctive legality and the distinctive Americanness of legal thought. It offers an intellectual history of 20th century American law, with an emphasis on core controversies and debates.

**Schedule:** 01:30 pm - 02:50 pm M

**ANTHROPOLOGY**

**ANT 215 Human Adaptation**

**Professor:** Janet M. Monge

**Description:** Human adaptation focuses on human anatomy and behavior from an evolutionary perspective. Lectures and weekly laboratory sessions focus on the evolution of the human brain, dentition and skeleton to provide students with a practical understanding of the anatomy and function of the human body and its evolution, as well as some of its biological limitations. No science background is required on the part of the student.

**Schedule:** 11:00 am - 12:20 pm M W

**ANT 223 Policing and Militarization Today**

**Professors:** Aisha M. Beliso-De Jesus, Laurence Ralph

**Description:** This class aims to explore transnational issues in policing. Drawing heavily upon anthropological methods and theory, we aim neither to vindicate nor contest the police's right to use force (whether a particular instance was a violation of law), but instead, to contribute to the understanding of force (its forms, justifications, interpretations). The innovative transnational approach to policing developed during the semester will allow for a cross-cultural comparative analysis that explores larger rubrics of policing in a comprehensive social scientific framework. We hope that you are ready to explore these exciting and urgent issues with us.

**Schedule:** 01:30 pm - 03:20 pm T

**ANT 334 Speech and Bull**

**Professor:** Carolyn M. Rouse

**Description:** Every culture has norms around speaking and policing speech. This class focuses on what anthropologists call language ideologies and how they legitimate institutional forms such as law, medicine, kinship, and exchange. Rules around language also shape who can speak, how they can speak, and how their speech is received based on identities such as race, gender, sexuality, and/or social status. Students in the course will learn why language is far more than words alone which is why people are able to call out disingenuous speech or BS.

**Schedule:** 10:00 am - 10:50 am M W

**ART AND ARCHAEOLOGY**

**ART 102 An Introduction to the History of Architecture**

**Professors:** Basile C. Baudez, Carolyn Yerkes

**Description:** A survey of architectural
history in the west, from ancient Egypt to 20th-century America, that includes comparative material from around the world. This course stresses a critical approach to architecture through the analysis of context, expressive content, function, structure, style, building technology, and theory. Discussion will focus on key monuments and readings that have shaped the history of architecture.

Schedule: 11:00 am - 11:50 am M W

ART 214 Contemporary Art: 1950 - 2000
Professor: Irene V. Small

Description: A critical study of the major movements, paradigms, and documents of postwar art--abstract-expressionist, pop, minimalist, conceptual, process and performance, site-specific, etc. Special attention to crucial figures (e.g., Jackson Pollock, Andy Warhol, Robert Smithson) and problems (e.g., "the neo-avant-garde", popular culture, feminist theory, political controversies, "postmodernism").

Schedule: 11:00 am - 11:50 am T Th

ART 228 Art and Power in the Middle Ages
Professors: Charlie Barber , Beatrice E. Kitzinger

Description: In twelve weeks this course will examine major art works from the period ca. 300-1200 CE. Presenting works from Europe and the Middle East, and working with the Princeton collections in precept, the course will introduce students to the art of Catholicism and Orthodoxy, Judaism and Islam; the great courts of the Eastern- and Holy Roman Empires, and the roving Vikings, Celts and Visigoths. Students will not only be invited to consider how art can represent and shape notions of sacred and secular power, but will also come to understand how the work of 'art' in this period is itself powerful and, sometimes, dangerous.

Schedule: 10:00 am - 10:50 am M W

ART 267 Mesoamerican Art
Professor: Bryan R. Just

Description: This course explores the visual and archaeological world of ancient Mesoamerica, from the first arrival of humans in the area until the era of Spanish invasion in the early 16th century. Major culture groups to be considered include Olmec, Maya, and Aztec. Preceptorial sections will consist of a mix of theoretically-focused discussions, debate regarding opposing interpretations in scholarship, and hands-on work with objects in the collections of the Princeton University Art Museum.

Schedule: 11:00 am - 11:50 am T Th

ASTROPHYSICAL SCIENCES

AST 203 The Universe
Professors: Christopher F. Chyba, Jo Dunkley, Michael A. Strauss

Description: This course, whose subject matter covers the entire universe, targets the frontiers of modern astrophysics. Topics include the planets of our solar system; the search for extrasolar planets and extraterrestrial life and intelligence; the birth, life, and death of stars; black holes; the zoo of galaxies and their evolution; the Big Bang and the expanding universe; and dark matter, dark energy, and the large-scale structure of the universe. This course is designed for the non-science major and has no prerequisites past high
school algebra and geometry. High school physics would be useful, but is not required.

**Schedule:** 03:00 pm - 04:20 pm T Th

**AST 204 Topics in Modern Astronomy**  
**Professor:** Joshua N. Winn

**Description:** This course provides a broad overview of modern astronomy and astrophysics for students in the sciences. Emphasis is on the application of basic physics to understanding of astronomical systems. Topics include the Solar System; planetary systems and exoplanets; the birth, life, and death of stars; white dwarfs, neutron stars, and black holes; the Milky Way and distant galaxies; cosmology, dark matter and dark energy, and the history of the Universe.

**Schedule:** 03:00 pm - 04:20 pm M W

**CHEMICAL AND BIOLOGICAL ENGINEERING**

**CBE 246 Thermodynamics**  
**Professor:** Richard A. Register

**Description:** The course focuses on basic principles governing the equilibrium behavior of macroscopic systems and their applications to materials and processes of interest in modern chemical engineering. We introduce the fundamental thermodynamic concepts: energy conservation (First Law); temperature and entropy (Second Law); thermodynamic potentials; equilibrium and stability. These ideas are applied to problems such as calculating the equilibrium compositions of coexisting phases or reacting mixtures, as well as analyzing the thermodynamic efficiency of power generation and refrigeration cycles.

**Schedule:** 10:00 am - 10:50 am M W F

**CBE 440 The Physical Basis of Human Disease**  
**Professor:** Celeste M. Nelson

**Description:** This course covers major diseases (cancer, diabetes, heart disease, infectious diseases), the physical changes that inflict morbidity and mortality, the design constraints for treatment, and emerging technologies that take into account these physical hurdles. Taking the perspective of the design constraints on the system (that is, the mass transport and biophysical limitations of the human body), we will survey recent innovations from the fields of drug delivery, gene therapy, tissue engineering, and nanotechnology.

**Schedule:** 11:00 am - 12:20 pm T Th

**CIVIL AND ENVIRONMENTAL ENGINEERING**

**CEE 262A Structures and the Urban Environment**  
**Professor:** Maria E. Garlock

**Description:** Known as "Bridges", this course focuses on structural engineering as a new art form begun during the Industrial Revolution and flourishing today in long-span bridges, thin shell concrete vaults, and tall buildings. Through critical analysis of major works, students are introduced to the methods of evaluating engineered structures as an art form. Students study the works and ideas of individual engineers through their basic calculations, their builder's mentality and their aesthetic imagination. Illustrations are taken from various cities and countries thus demonstrating the influence of culture on our built
environment.

Schedule: 10:00 am - 10:50 am M W

CEE 312 Statics of Structures
Professor: Branko Glisic

Description: Develops notions of internal forces and displacements, and instructs students how to design and analyze structures. Presents the fundamental principles of structural analysis, determination of internal forces, and deflections under the static load conditions, and introduces the bending theory of plane beams and the basic energy theorems. The theory of the first order will be developed for continuous girders, frames, arches, suspension bridges, and trusses, including both statically determinate and indeterminate structures. Basic principles for construction of influence lines and determination of extreme influences will be presented.

Schedule: 08:30 am - 09:50 am M W

CEE 364 Materials in Civil Engineering
Professor: Claire E. White

Description: An introductory course on materials used civil and environmental engineering. Lectures on structure and properties of construction materials including concrete, steel, glass and timber; fracture mechanics; strength testing; mechanisms of deterioration; impact of material manufacturing on the environment. Labs on brittle fracture, heat treatment of steel, strength of concrete, mechanical properties of wood.

Schedule: 11:00 am - 12:20 pm W F

CEE 365 Soil Mechanics
Professor: Raymond E. Sandiford

Description: General introduction to the engineering properties of soils; soil classification and identification methods; site exploration; sampling; laboratory and in-situ testing techniques; permeability and seepage; soil consolidation and settlement; shear strength; lateral earth pressure; bearing capacity; slope stability; basics of foundation design; and tunneling. Students will have an opportunity to perform Finite Element Modeling (FEM) as part of the class project.

Schedule: 08:30 am - 09:50 am M W

UNIVERSITY CENTER FOR HUMAN VALUES

CHV 401 HUM 402 Hope: A History
Professor: Adam S. Potkay

Description: This interdisciplinary course combines literary, philosophical and theological analysis to investigate hope and how its formulations in the West have evolved over time, from Greco-Roman antiquity to the present. When is hope a virtue or positive aspect of agency, and when is it an illusion or vice? What are the relations of personal to national, political, and religious hopes? Readings will cover poetry and prose fiction, philosophical essays and drama, drawn from the Bible and authors including Hesiod, Lucretius, Cicero, Dante, William Wordsworth, the Shelleys, Emily Dickinson, Kafka, Camus, Holocaust witnesses, and M. L. King.

Schedule: 10:00 am - 10:50 am M W F

CLASSICS

CLA 218 The Roman Republic
Professor: Harriet I. Flower

Description: We will study the contexts, causes, and consequences of
one small city-state's rise to world empire, through analysis of primary sources in translation and discussion of recent archaeological findings. Emphasis is on the development of Roman society, the growth and transformation of republican government, and the Republic's afterlives in modern politics and culture.

**Schedule:** 01:30 pm - 02:20 pm M W

**COMPARATIVE LITERATURE**

**COM 202 Introduction to Jewish Cultures**
**Professor:** Lital Levy

**Description:** This course explores the relationship between culture, history, religion, and ethics in global Jewish experience from the Bible to the present. Following representations of themes such as sexuality, suffering, and mysticism, we'll debate the boundaries between religion and culture and see how ethical questions play out in cultural forms. How does Jewish law, ritual, and custom inform Jewish culture, and how does culture sometimes push back against religious norms? Topics include Bible and Talmud, kabbalah, sexuality, Yiddish, Arab Jews, Zionism, Jewish music, food, literature, cinema, and comics. No background required; readings in English.

**Schedule:** 11:00 am - 12:20 pm T

**COM 332 Who Owns This Sentence? Copyright Culture from the Romantic Era to the Age of the Internet**
**Professor:** David M. Bellos, Alexandre A. Montagu

**Description:** Literature, art, computer code, social media, news, music and video games--copyright underpins almost everything we read or hear. But it is not an old idea. Why was it invented? For whose benefit? What is a "work" or an "author"? Is copyright still relevant, or is a new framework needed? From Balzac and Dickens to Facebook, from Bizet to Broadway musicals, this new course invites students to think about the philosophical and cultural issues raised by copyright in the past and present--and for the future. Taught jointly by a professor of Comparative Literature and a practicing intellectual property lawyer; for students in all disciplines.

**Schedule:** 03:00 pm - 04:20 pm M

**COMPUTER SCIENCE**

**COS 217 Introduction to Programming Systems**
**Professor:** Szymon M. Rusinkiewicz

**Description:** Introduction to programming systems, including modular programming, advanced program design, programming style, test, debugging and performance tuning; machine languages and assembly language; and use of system call services.

**Schedule:** 10:00 am - 10:50 am M W

**COS 226 Algorithms and Data Structures**
**Professors:** Maia Ginsburg, Arvind Narayanan

**Description/Objectives:** This course surveys the most important algorithms and data structures in use on computers today. Particular emphasis is given to algorithms for sorting, searching, and string processing. Fundamental algorithms in a number of other areas are covered as well, including geometric algorithms, graph algorithms, and some
numerical algorithms. The course will concentrate on developing implementations, understanding their performance characteristics, and estimating their potential effectiveness in applications.

**Schedule:** 11:00 am - 12:20 pm T Th

**COS 320 Compiling Techniques**  
**Professor:** Zachary Kincaid

**Description:** Understand the design and construction of compilers. Concepts include syntax analysis, semantics, code generation, optimization and run-time systems. Translation of imperative languages (such as C), functional languages (such as ML), and object-oriented languages (such as Java) will be studied. Students will implement a complete compiler for a small language.

**Schedule:** 01:30 pm - 02:50 pm T Th

**COS 324 Introduction to Machine Learning**  
**Professor:** Ryan P. Adams

**Description/Objectives:** Provides a broad introduction to different machine learning paradigms and algorithms, providing a foundation for further study or independent work in machine learning, artificial intelligence, and data science. Topics include linear models for classification and regression, support vector machines, neural networks, clustering, principal components analysis, Markov decision processed, planning, and reinforcement learning.

**Schedule:** 01:30 pm - 02:50 pm M W

**COS 340 Reasoning about Computation**  
**Professors:** Iasonas Petras, Ran Raz

**Description:** An introduction to mathematical topics relevant to computer science. Combinatorics, probability and graph theory will be covered in the context of computer science applications. The course will present a computer science approach to thinking and modeling. Students will be introduced to fundamental concepts in theoretical computer science, such as NP-completeness and cryptography that arise from the world view of efficient computation.

**Schedule:** 03:00 pm - 04:20 pm M W

**COS 423 Theory of Algorithms**  
**Professor:** Robert Tarjan

**Description:** Design and analysis of efficient data structures and algorithms. General techniques for building and analyzing algorithms. Introduction to NP-completeness.

**Schedule:** 11:00 am - 12:20 pm M W

**COS 445 Economics and Computing**  
**Professor:** Matt Weinberg

**Description:** Computation and other aspects of our lives are becoming increasingly intertwined. We will study topics on the cusp between economics and computation. The focus will be on the mathematical and computational tools involved in the interaction of economics and computation. Topics: games on networks, auctions, mechanism and market design, computational social choice. The aim of the course is: (1) to understand the game-theoretic issues behind systems involving computation such as online networks, (2) to learn how algorithms and algorithmic thinking can help with designing better decision and allocation mechanisms in an offline world.

**Schedule:** 01:30 pm - 02:50 pm T Th
COS 448 Innovating Across Technology, Business, and Marketplaces

Professors: Robert S. Fish, Jaswinder P. Singh

Description: Course teaches engineering students about issues tackled by leading Chief Technology Officers: the technical visionaries and/or managers who innovate at the boundaries of technology and business by understanding both deeply, and who are true partners to the CEO, not just implementers of business goals. Focus will be on thinking like a CTO (of a startup and a large company) from technology and business perspectives, and on software and Internet-based businesses. Industry-leading guest speakers provide perspectives too.

Schedule: 11:00 am - 12:20 pm M W

ECONOMICS

ECO 100 Introduction to Microeconomics

Professor: Kelly Noonan

Description: Economics studies the allocation of scarce resources. Since this is a microeconomics course, it will focus on the decisions made by individual consumers and producers. We will consider a variety of different market structures ranging from perfect competition to monopoly. We also will discuss the rationale for government involvement when there are market failures.

Schedule: 11:00 am - 11:50 am M W

ECO 101 Introduction to Macroeconomics

Professor: Alan S. Blinder

Description: Analysis of the operation of the national economy, with emphasis on the causes and consequences of recessions and booms, inflation and unemployment -- and possible policy responses to each. Attention is also paid to the banking and financial systems, the financial crisis, and international influences on the U.S. economy.

Schedule: 01:30 pm - 02:50 pm T Th

ECO 301 Macroeconomics

Professor: Arlene Wong

Description: This course covers the theory of modern macroeconomics in detail. We will focus on the determination of macroeconomic variables -- such as output, employment, price, and the interest rate -- in the short, medium, and long run, and we will address a number of policy issues. We will discuss several examples of macroeconomic phenomena in the real world. A central theme will be to understand the powers and limitations of macroeconomic policy in stabilizing the business cycle and promoting growth.

Schedule: 01:30 pm - 02:50 pm T Th

ECO 311 Macroeconomics: A Mathematical Approach

Professor: Giovanni L. Violante

Description: This course examines the determinants of long-run economic growth, short-run business cycle fluctuations, asset prices, unemployment, and the conduct of fiscal and monetary policy. The first part of the course develops a framework for the analysis of households' consumption and savings behavior and firms' production decisions, and uses that to analyze growth, inequality, asset prices, and fiscal policy. The second part of the course extends that analysis to examine business cycle fluctuations, including unemployment and inflation. Current issues in macroeconomic and economic policy are discussed.
throughout.

**Schedule:** 01:30 pm - 02:50 pm T Th

**ECO 312 Econometrics: A Mathematical Approach**  
**Professor:** Michal Kolesar

**Description:** This course is an introduction to econometrics. Econometrics is a sub-discipline of statistics that provides methods for inferring economic structure from data. This course has two goals. The first goal is to give you means to evaluate an econometric analysis critically and logically. Second, you should be able to analyze a data set methodically and comprehensively using the tools of econometrics.

**Schedule:** 01:30 pm - 02:50 pm M W

**ECO 315 Topics in Macroeconomics**  
**Professor:** Nobuhiro Kiyotaki

**Description:** This course uses economic theory to study credit boom, financial crisis and public policy. The topics include historical overview of financial crises, credit and asset price boom, banking crisis, balance of payment crisis, sovereign debt crisis, and monetary, fiscal and macro prudential policies.

**Schedule:** 01:30 pm - 02:50 pm M W

**ECO 351 Economics of Development**  
**Professor:** Thomas Fujiwara

**Description:** This course is divided in two parts. The first examines why some countries are so much richer than others, and critically evaluates different explanations for this phenomenon on theoretical and empirical grounds. The second part deals with selected microeconomic issues related to life in the developing world, examining theories and data on education, health, credit and other topics.

**Other information:**  
Students should have familiarity with calculus and with multivariate statistical regressions, since this course requires solving economic models with derivatives/first order conditions and reading empirical papers.

**Schedule:** 08:30 am - 09:50 am M W

**ECO 355 Economics of Food and Agriculture**  
**Professor:** Silvia Weyerbrock

**Description:** Agricultural, food, and nutrition policies have a significant impact on society. This course uses economic analysis to study the agricultural and food sector and related government policies in rich and poor countries. Topics include: agriculture in the global economy and in economic development; biofuels and GMOs; agriculture and the environment/climate change; agricultural trade and trade agreements; hunger, famines and food aid; U.S. farm, food and nutrition policies; and the food industry.

**Schedule:** 11:00 am - 12:20 pm M W

**ECO 363 Corporate Finance and Financial Institutions**  
**Professor:** David Schoenherr

**Description:** This course examines the determinants of corporate financing decisions and the role of financial institutions in the wider context of the working of financial markets. Topics include capital budgeting, capital structure, risk management, and corporate governance. Additionally, the course introduces various methodologies for valuing individual projects, as well as entire companies.
ECO 370 American Economic History
Professor: Elizabeth C. Bogan

Description: Modern economic theory is used to analyze growth and fluctuations in U.S. output from colonial times to the present. The course examines the role of labor markets, property rights in land and labor, financial institutions, transportation, innovation and other factors in economic growth. Before examining twentieth century fluctuations, a week is spent on business cycle theory. Then particular emphasis is placed on The Great Depression and its relationship to the recession of 2007-2009.

Schedule: 03:30 pm - 04:20 pm T Th

ENGINEERING

EGR 277 Technology and Society
Professor: Janet Vertesi

Description: Technology and society are unthinkable without each other, each provides the means and framework in which the other develops. To explore this dynamic, this course investigates a wide array of questions on the interaction between technology, society, politics, and economics, emphasizing the themes such as innovation and regulation, risk and failure, ethics and expertise. Specific topics covered include nuclear power and disasters, green energy, the development and regulation of the Internet, medical expertise and controversy, intellectual property, the financial crisis, and the electric power grid.

Schedule: 11:00 am - 11:50 am MW

EGR 395 Venture Capital and Finance of Innovation
Professor: Shahram Hejazi

Description: Venture capital is a driving force behind innovation and entrepreneurship, although the unique working details of venture capital firms and their processes are well-kept secrets. Early stage investors not only fund startups but also enable innovation through mentorship and partnership with the entrepreneurs. Understanding how these investors think and operate is critical to students who are interested in entrepreneurship, as well as to those who would like to pursue venture capital.

Other: Auditors interested in this class should send an email to pucap@princeton.edu. Please include a 150 word paragraph stating background experience and the reason for taking this class. Registration will be per instructor approval. RSVP by 1/18/19.

Schedule: 11:00 am - 12:20 pm T Th

EGR 498 Special Topics in Social Entrepreneurship - Rethinking Social Profit Organizations
Professor: Martin P. Johnson

Description: A growing number of entrepreneurs are solving social and environmental challenges by creating private 'nonprofit' organizations and projects. This course will explore the challenges and opportunities they face. While the course will cover the styles and competencies that successful nonprofit managers tend to exhibit, it will explore system-wide changes needed to improve the sector's outcomes, including key ways that funders, government, businesses and the beneficiaries of nonprofits can help.

Schedule: 01:30:00 pm - 04:20:00 pm F
ELECTRICAL ENGINEERING

ELE 201 Information Signals
Professors: H. Vincent Poor, Yanina Y. Shkel

Description: Signals that carry information play a central role in technology and engineering—ranging from sound and images to MRI, communication, radar, and robotic control. This course teaches mathematical tools to analyze, manipulate, dissect, and preserve information signals. For example, many continuous signals can be perfectly represented through sampling (Nyquist theorem), which leads to digital signals. A major focus of the course is the Fourier transform. We also study linear time-invariant systems, modulation, quantization, and stability (Laplace transform and z-transform). Lab design projects in Matlab include a "Shazam" music ID system.

Schedule: 09:30 am - 10:50 am T Th

ELE 342 Principles of Quantum Engineering
Professor: Ravindra N. Bhatt

Description: This course provides an understanding of the basic principles that govern the operation of modern solid state and optoelectronic devices. The emphasis is on fundamentals rather than applications. The course complements ELE 396, Intro to Quantum Computing. The major portion of the course will be devoted to quantum mechanics and statistical physics with examples from solid state and materials physics and quantum electronics. This provides the basic background needed to understand the physics of device operations and also prepares the student for more advanced courses in solid state and quantum electronics (such as ELE 441, 442 & 453).

Other information: Background in differential equations very useful. Prerequisites PHY208 and PHY305.

Schedule: 11:00 am - 12:20 pm T Th

ELE 381 Networks: Friends, Money and Bytes
Professor: Christopher G. Brinton

Description: This course is oriented around practical questions regarding the social, economic and technological networks in our daily lives. How does Google sell ad spaces and rank web pages? How does Netflix recommend movies and Amazon rank products? How do I influence people on Twitter? Why doesn't the Internet collapse under congestion, and does it have an Achilles heel? Why does each gigabyte of mobile data cost $20, yet Skype is free? How come WiFi is slower at hotspots than at home, and what is inside the cloud of iCloud? In formulating and answering each question, we learn key algorithms, architectures, and concepts behind the networking industry.

Schedule: 03:00 pm - 04:20 pm M W

ELE 464 Embedded Computing
Professor: Niraj K. Jha

ENERGY STUDIES

ENE 431 Solar Energy Conversion
Professor: Barry P. Rand


Schedule: 03:00 pm - 04:20 pm T Th

ENGLISH

ENG 200 Introduction to English Literature: 14th to 18th Century
Professor: Russell J. Leo

Description: An introduction to the leading figures of earlier English Literature, including Chaucer, Spenser, Shakespeare, Milton, Pope, and Swift; to literary history as a mode of inquiry; and to some of the questions that preoccupy English poetry, prose, and drama across four centuries: art, beauty, romance, desire, the will, the mind, God, sex, and death.

Schedule: 01:30 pm - 02:50 pm T Th

ENG 206 Reading Literature: Fiction
Professor: Sarah A. Chihaya

Description: The making and interpretation of fictions are among our everyday activities, whether or not we realize it; however, we don't always consider what "fiction" is, or what it means. This course will introduce students to the diverse and specific forms fiction takes in literature, with emphasis on the novel and film. We will interrogate the act of creating fictions, and the impact a fictional world can make on a reader. Along the way, we will continually consider two deceptively simple questions: what does fiction do to us? What can fiction do for us?

Schedule: 02:30 pm - 03:20 pm M W

ENG 228 Introduction to Irish Studies
Professor: Fintan O'Toole

Description: This interdisciplinary 200-level course offers a broad introduction to the study of Irish literature, history and culture. Students will gain a grounding in: Irish storytelling since the early Christian period, including through music and song; the history of the conquest of Ireland and Irish independence movements; the role of the Irish language in culture; the famine and its social and political aftermath; the history of religious difference; the relationship between Britain and Ireland; the work of major literary figures such as Swift, Joyce, Yeats, Beckett and Heaney; contemporary Ireland and the Irish economy.

Schedule: 11:00 am - 11:50 am T Th

ENG 321 Shakespeare II
Professor: Leonard Barkan

Description: Shakespeare's greatest plays from the middle and late phases of his career, concentrating on tragedies and the romances; studies in literature, history, and theatrical performance. 
Schedule: 11:00 am - 11:50 am M W

ENG 351 American Literature: 1865-1930
Professor: Alfred Bendixen

Description: The development of American literature from the end of the Civil War to the start of the Great Depression: the rise of realism, naturalism, and modernism. Emphasis on the artistic achievement of such writers as James, Twain, Chopin, Wharton, Cather, Eliot, Hemingway, and Fitzgerald.

Schedule: 10:00 am - 10:50 am M W

ENG 360 Modern Fiction
Professor: Maria A. DiBattista

Description: The modern movement in English fiction from Conrad, Joyce and Woolf to Nabokov and Rushdie, writers who changed our sense of what a novel is, what it can say and how it can say it.

Schedule: 10:00 am - 10:50 am T Th

ENG 395 Literature, Food, and the American Racial Diet
Professor: Anne Cheng

Description: Food, like books, is the site of our greatest consumption of and most vulnerable encounter with "otherness". This course explores how "taste" informs the ways in which we ingest or dispel racial otherness. Through novels and cinema in American and American multi-ethnic cultural production, we will study how the meeting of food and word inform categories such as race, nationhood, gender, ecology, and family, and class. Topics include: "Transcendental Primitivism," "Modernist Orientalism," "Chocolate Women on the Edge," "Parenting/Consuming," "Ecology and the Humanimal," and more.

Schedule: 10:00 am - 10:50 am T Th

FRENCH

FRE 222 The Making of Modern France: French Literature, Culture, and Society from 1789 to the Present
Professor: Goran Magnus Blix

Description: This course will be taught in French. This course examines the major historical and cultural developments that have shaped France since the Revolution. By studying a series of classic texts, important films, paintings, and essays, we will undertake an interdisciplinary tour through two centuries of French cultural history, addressing issues such as nationhood, colonialism, democracy, and consumer society. The focus will be on the relations between artistic renovation, social change, and historical events.

Other: This course will be taught in French.

Schedule: 01:30 pm - 02:50 pm T

Professor: Andre Benhaim

Description: This course will be taught in French. Since the Revolution, France has declared itself a haven for refugees from all countries. Yet, a series of laws and often fierce debates have recently marred this benevolence with sometimes dramatic limitations. Keeping in mind different models of hospitality in the Western, Mediterranean, and Arab traditions, we will examine the 'case study' of France and North Africa by comparing ethical and political, individual and collective models of hospitality. We will address issues such as immigration, nationality,
and cultural identity and reflect on what it means to welcome a stranger.

**Other:** This course will be taught in French.

**Schedule:** 11:00 am - 12:20 pm T

**GERMAN**

**GER 210 Introduction to German Philosophy**
**Professor:** Johannes Wankhammer

**Description:** An introduction to the German philosophical tradition from the Enlightenment to the present through the study of its major figures (Kant, Hegel, Marx, Nietzsche, Heidegger, Adorno, Arendt). This course offers a survey of German intellectual history based upon direct engagement with original texts. Domains to be explored include metaphysics, aesthetics, the theory of knowledge, political philosophy and the philosophy of language.

**Other information:** Course taught in English based on texts in English translations.

**Schedule:** 12:30 pm - 01:20 pm M W

**HISTORY**

**HIS 212 Europe in the World: From 1776 to the Present Day**
**Professor:** Harold James

**Description:** An overview of European history since the French Revolution, taking as its major theme the changing role of Europe in the world. It looks at the global legacies of the French and Russian revolutions, and how the Industrial Revolution augmented the power of European states, sometimes through formal and sometimes informal imperialism. How did ideologies like nationalism, liberalism, communism and fascism emerge from European origins and how were they transformed? How differently did Europeans experience the two phases of globalization in the 19th and 20th centuries? Biographies are used as a way of approaching the problem of structural change.

**Schedule:** 10:00 am - 10:50 am M W

**HIS 214 British Empire in World History, 1700-2000**
**Professor:** Linda J. Colley

**Description:** Until the First World War, empire was the most common form of rule and political organization. This lecture course focuses on the story of the biggest empire in world history, the British Empire, and uses it as a lens through which to examine the phenomenon of empire more broadly. How was a small set of islands briefly able to establish global predominance? What roles did war, race, religion, migration - and luck - play in the process? What was the impact on literature, art, gender, and ways of seeing? And how far do the great powers of today, the USA, China and Russia, retain some of the characteristics of empires in the past?

**Schedule:** 10:00 am - 10:50 am T Th

**HIS 304 Modern Latin America since 1810**
**Professor:** Robert A. Karl

**Description:** This course explores the principal themes of Latin American history, from independence to the present. The central focus will be on the contentious development of the modern nation-state, as governments, elites, and popular forces struggled, via politics and violence, to define the bounds of what constituted the "nation." The course will also cover major...
international processes affecting Latin America, including the emergence of global inequality and competition between world powers, focusing on the rise of the United States.

Schedule: 10:00 am - 10:50 am M W

HIS 306 Latino History
Professor: Rosina A. Lozano

Description: Covering the history of Latinos in the United States, this course explains the historical origins of debates over land ownership, assimilation expectations, discrimination, immigration regulation, intergroup differences, civil rights, and labor disputes. It ends by explaining how Latinos became an identifiable group. History 306 looks transnationally at Latin America's history to explore shifts in public opinion and domestic policies in the US. This course talks about all Latinos who have (im)migrated from across Latin America, but focuses most heavily on Mexican Americans, and then on Puerto Ricans and Cubans.

Schedule: 02:30 pm - 03:20 pm M W

HIS 315 Colonial and Postcolonial Africa
Professor: Jacob S. Dlamini

Description: This course is an examination of the major political and economic trends in twentieth-century African history. It offers an interpretation of modern African history and the sources of its present predicament. In particular, we study the foundations of the colonial state, the legacy of the late colonial state (the period before independence), the rise and problems of resistance and nationalism, the immediate challenges of the independent states (such as bureaucracy and democracy), the more recent crises (such as debt and civil wars) on the continent, and the latest attempts to address these challenges from within the continent.

Schedule: 11:00 am - 12:20 pm T Th

HIS 344 The Civilization of the High Middle Ages
Professor: Randall Todd Pippenger

Description: An analysis of typical institutions, social and economic structures, and forms of thought and expression from about 1050 to about 1350. Emphasis is placed on the elements of medieval civilization that have influenced the subsequent history of European peoples. Two lectures, one preceptorial.

Schedule: 11:00 am - 11:50 am M W

HIS 351 France, 1815 to the Present
Professor: Philip G. Nord

Description: The history of France in the 19th and 20th centuries appears a rapid and perplexing turnover of regimes and administrations. This course has two interrelated aims: (1) to account for France's peculiar political instability in terms of social struggles which were played out in one form or another in all European states, and thereby, (2) to set France's unique pattern of development in its European context. Topics will include: the Restoration and the legacy of the French Revolution; 1848 and Bonapartism; popular revolt in the fin de siecle and the triumph of the Third Republic, etc.

Schedule: 11:00 am - 11:50 am M W

HIS 368 England from the Wars of the Roses to the Glorious Revolution
Professor: Eleanor K. Hubbard

Description: The two centuries between the Wars of the Roses and the Glorious
Revolution saw the end of the feudal order, astonishing revolutions in church and state, a literary renaissance, two ruling queens and one executed king in a deeply patriarchal and hierarchical society, civil wars, the beginnings of the British empire, and the emergence of a recognizably modern society of newspapers, scientific experiments, and political parties. These extraordinary developments were, however, far from being natural or predetermined. This course will explore how such dramatic transformations took place in a society seemingly resistant to change.

Schedule: 01:30 pm - 02:20 pm M W
HIS 372 Revolutionary America
Professor: Michael A. Blaakman
Description: Why was there an American Revolution? How revolutionary was it, and for whom? Why did it end with the creation of a fractious independent republic, an "empire of liberty" rooted in slavery? This class explores the causes, course, and consequences of the American Revolution, from the Seven Years War through the ratification of the U.S. Constitution. Lectures, readings, and precepts will trace the ideas and experiences of the many peoples whose lives intersected with the United States' struggle for independence: female and male, black and white and Native American, free and enslaved, American and British, Loyalist and Patriot.

Schedule: 11:00 am - 11:50 am T Th
HIS 375 US Intellectual History: Development of American Thought
Professor: Peter Wirzbicki
Description: This course examines the history of the United States through its intellectuals and major ideas. Starting with the Puritans and progressing through to the contemporary intellectual scene, it hopes to introduce students to major debates, themes, and intellectual movements in the history of American ideas. We will complement the thought of these great thinkers with attention to the institutions and social contexts in which those ideas developed. Students will leave this class understanding the inner logistics and social contexts of the major intellectual systems that have marked American life.

Schedule: 02:30 pm - 03:20 pm T Th
PROGRAM IN HUMANISTIC STUDIES
HUM 245 Creation Stories: Babylonian, Biblical and Greek Cosmogonies Compared
Professor: Johannes Haubold
Description: This course compares the canonical cosmogonies of ancient Mesopotamia, Israel and Greece. We will study in detail the creation epic Enuma eliÁ¡ and the flood epic Atra-hasis from Babylon, the opening chapters of the Biblical book of Genesis, and Hesiod's Theogony and Catalogue of women; as well as considering related texts from across the ancient Mediterranean. We will ask how the set texts describe the earliest history of the world and what this meant for their ancient audiences, how they relate to each other, and how they inform the long history of human investigation into the origins of the universe.

Schedule: 11:00 am - 11:50 am T Th
ITALIAN
ITA 225 Music and Lyrics: Italy in the Eyes of its Pop Singers
Professor: Simone Marchesi
Description: This class is taught in
Italian. Working at the crossroads of American influences and the tradition of political songs, Italian cantautori merge popular appeal and literary sophistication. For at least three generations, their songs have provided an engaged soundtrack to Italy's turbulent social, political and cultural transformations in the post-WWII years. As lyrics on the page, as music to be listened to, and as performances recorded in video, Italian canzoni d'autore are part of Italian history and identity today.

**Other:** This class is taught in Italian.

**Schedule:** 11:00 am - 12:20 pm T

**ITA 225 Tutto Dante**
**Professor:** Simone Marchesi

**Description:** This class is taught in Italian. This course covers the study of the entirety of Dante's "Commedia" in connection with Dante's other poetic and prose works in the vernacular. Highly interactive seminar, taught in Italian.

**Other:** This class is taught in Italian.

**Schedule:** 11:00 am - 12:20 pm M W

**ITA 310 Topics in Modern Italian Cinema - New Italian Cinema: New Media (in English)**
**Professors:** Gaetana Marrone-Puglia, Giovanni Riotta

**Description:** This course looks at the way Italy has expressed its cultural, political, and social individuality in major cinematic works from 1968 to the present. Directors such as Bertolucci, Moretti, Tornatore, Ozpetek, and Benigni offer a panorama of a generation of filmmakers that has contributed to the renewal of Italian cinema. Topics will be drawn from current issues, and will include the Holocaust and questions of memory, terrorism, political violence, migration, gender ideologies, the Mafia. Emphasis on film style and techniques.

**Schedule:** 01:30 pm - 02:50 pm W

**PROGRAM IN LINGUISTICS**

**LIN 201 Introduction to Language and Linguistics**
**Professor:** Christiane D. Fellbaum

**Description:** An introduction to the scientific analysis of the structure and uses of language. Core areas covered include phonetics and phonology, morphology, the lexicon, syntax, semantics and pragmatics, with data from a wide range of languages. Topics include the biological basis of language, language and cognition, the neurology of language and language disorders, and first and second language acquisition.

**Schedule:** 10:00 am - 10:50 am M W

**LIN 250 Language in Its Contexts**
**Professor:** Laura Kalin

**Description:** This course investigates language in its social, cultural, political, and historical contexts. Does your native language influence your perception, your behavior, and your culture? How does your identity influence properties of your language? What happens when unrelated languages come into contact for prolonged periods? How are new languages born? Why isn't English the official language of the United States, and should it be? We will explore these questions (and more) by engaging with the often contradictory opinions of specialists and the public, as well as with the empirical realities behind these different language situations.

**Schedule:** 03:00 pm - 04:20 pm T Th
LIN 301 Phonetics and Phonology  
Professor: Florian Lionnet

Description: This course is an introduction to the science of speech sounds (phonetics) and sound systems (phonology). Students will 1) learn how sounds from a wide variety of languages are produced, and learn to produce and transcribe them; 2) understand and analyze the acoustic properties of speech sounds using (free) software; 3) understand the unconscious knowledge speakers have of the rules and constraints that govern their native language's sound system; 4) extract phonological generalizations from phonetic data from various languages; 5) learn about the similarities and differences between the sound systems of the world's languages.

Schedule: 11:00 am - 12:20 pm M W

MECHANICAL AND AEROSPACE ENGINEERING

MAE 222 Mechanics of Fluids  
Professor: Marcus N. Hultmark

Description: Introduction to the physical and analytical description of phenomena associated with the flow of fluids. Topics include the principles of conservation of mass, momentum and energy; lift and drag; open channel flow; dynamic similitude; laminar and turbulent flow.

Schedule: 10:00 am - 10:50 am M W F

MAE 322 Mechanical Design  
Professors: Glenn A. Northey, Daniel M. Nosenchuck

Description: This course builds on the technical foundations established in MAE 321, and extends the scope to include a range of advanced mechanism design. Students, working in teams, will be challenged to design and fabricate a robotic system that will draw upon multidisciplinary engineering elements. The robot will be used to facilitate common daily tasks. The selected tasks vary each year. CAD, CAE, and CAM will be utilized in the design/simulation/prototype process. A final public competition will be held among the design teams. Judges from relevant industries will be present.

Schedule: 11:00 am - 12:20 pm W F

MAE 332 Aircraft Design  
Professor: Luigi Martinelli

Description: This course discusses methods for the design of aircraft. Topics in aerodynamics, and structural design are emphasized in the context of a design project. Students will be required to complete a design project to fulfill the requirements of this class.

Schedule: 01:30 pm - 02:50 pm M W

MATHEMATICS

MAT 204 Advanced Linear Algebra with Applications  
Professor: Andrew V. Yarmola

Description: Companion course to MAT203. Linear systems of equations, linear independence and dimension, linear transforms, determinants, (real and complex) eigenvectors and eigenvalues, orthogonality, spectral theorem, singular value decomposition, Jordan forms, other topics as time permits. More abstract than MAT202 but more concrete than MAT217. Recommended for prospective physics majors and others with a strong interest in applied mathematics. Prerequisite: MAT104 or MAT215 or equivalent.

Schedule: 12:30 pm - 01:20 pm M W F
MAT 325 Analysis I: Fourier Series and Partial Differential Equations  
Professor: Yakov M. Shlapentokh-Rothman  
Description: Basic facts about Fourier Series, Fourier Transformations, and applications to the classical partial differential equations will be covered. Also Finite Fourier Series, Dirichlet Characters, and applications to properties of primes.

Schedule: 01:30 pm - 02:50 pm T Th

MOLECULAR BIOLOGY

MOL 101 From DNA to Human Complexity  
Professors: Bonnie L. Bassler, Ricardo Mallarino, Jodi Schottenfeld-Roames, Eric F. Wieschaus  
Description: This lecture and laboratory course will acquaint non-biology majors with the theory and practice of modern molecular biology focusing on topics of current interest to society. The course will cover basic molecular biology topics such as information storage and readout by DNA, RNA and proteins. The course will address how recent scientific advances influence issues relevant to humanity including stem cells and CRISPR; the human microbiome and bacterial pathogens; and how the human genome can be used to understand the evolution of modern humans.

Schedule: 11:00 am - 12:20 pm T Th

MOL 214 Introduction to Cellular and Molecular Biology  
Professors: Elizabeth R. Gavis, Daniel A. Notterman, Heather A. Thieringer  
Description: Important concepts and elements of molecular biology, biochemistry, genetics, and cell biology, are examined in an experimental context. This course fulfills the requirement for students majoring in the biological sciences and satisfies the biology requirement for entrance into medical school.

Schedule: 09:00 am - 09:50 am M W F

MOL 250 Food, Drugs and Society  
Professor: Jeffry B. Stock  
Description: The current environment in the US for the use and abuse of foods and drugs will be examined from a scientific fact-based perspective. Historical, economic, marketing, political, and public health drivers will be considered. Specific topics include government dietary recommendations (food politics), dietary supplements (from Vitamins to herbal extracts), pharmacology and ethical drug development (sulfa drugs, NSAIDS, etc), addiction and substance abuse (alcohol, nicotine, stimulants, opioids, etc), Alzheimer's disease and the problem of long-term care in an aging population, and Psychedelic drug use and abuse (psilocybin, mescaline, LSD, etc).

Schedule: 11:00 am - 12:20 pm T Th
MOL 345 Biochemistry  
**Professors:** Todd M. Greco, Sabine Petry  

**Description:** This course focuses on the fundamental biochemical principles that underlie cellular function. An emphasis will be placed on protein structure, function, and regulation. Additional topics covered will include metabolism and catalysis, and cutting-edge methodologies for studying macromolecules in health and disease systems.

**Schedule:** 01:30 pm - 02:50 pm T Th

MOL 348 Cell and Developmental Biology  
**Professors:** Rebecca D. Burdine, Danelle Devenport  

**Description:** The course will investigate the roles that gene regulation, cell-cell communication, cell adhesion, cell motility, signal transduction and intracellular trafficking play in the commitment, differentiation and assembly of cells into specialized tissues. The mechanisms that underlie development of multicellular organisms, from C. elegans to humans, will be examined using biochemical, genetic and cell biological approaches. In-class problem solving, group work, and active learning approaches will be used to emphasize key concepts and analyze experimental data.

**Schedule:** 11:00 am - 12:20 pm T Th

MOL 423 Molecular Basis of Cancer  
**Professor:** Yibin Kang  

**Description:** We will explore the molecular events leading to the onset and progression of human cancer. We will review the central genetic and biochemical elements that make up the cell cycle, followed by a survey of the signal transduction pathways and checkpoints that regulate it. We will discuss oncogenes, tumor suppressor and mutator genes that act in these pathways and review the role of viral oncogenes and their action on cells. We will investigate the role of cancer stem cells and the interaction between tumor and the host environment. We will explore specific clinical case studies in light of the molecular events underlying different cancers.

**Schedule:** 01:30 pm - 02:50 pm T Th

MOL 425 425 Infection: Biology, Burden, Policy  
**Professor:** Thomas E. Shenk  

**Description:** This course examines fundamental determinants of human-microbe interaction at the biological and ecological levels. The focus will be on major global infectious diseases, their burden of illness and policies for adequate prevention and control. Each infectious agent will be discussed in terms of its biology, epidemiology, pathogenesis, disease progression, as well as strategies for its prevention and control.

**Schedule:** 01:30 pm - 04:20 pm Th

MOL 433 Biotechnology  
**Professors:** Jane Flint  

**Description:** This course will consider the principles, development, outcomes and future directions of therapeutic applications of biotechnology, with particular emphasis on the interplay between basic research and clinical experience. Topics to be discussed include production of hormones and other therapeutic proteins, gene therapy, gene editing, oncolytic viruses, and stem cells. Reading will be from the primary literature.
**MUSIC**

**MUS 103 Introduction to Music**  
**Professor:** Rob C. Wegman

**Description:** MUS 103 is an introduction to Western art music, featuring works from around 800 to the mid-20th century. The course explains the basic elements of Western music, introducing them in the order in which they developed in history—rhythm, pitch, melody, harmony, form—and the historically significant styles and genres of composition.

**Schedule:** 01:30 pm - 02:50 pm M W

**MUS 206 Tonal Syntax**  
**Professor:** Steven Mackey

**Description:** An introduction to the syntactic structure of the music of the 18th and 19th centuries through exercises in analysis and composition.

**Schedule:** 12:30 pm - 01:20 pm M W

**MUS 234 Music of the Baroque**  
**Professor:** Wendy Heller

**Description:** A survey of musical styles and performance traditions in European music from approximately 1600-1750, including the music of Monteverdi, Scarlatti, Handel, Rameau, and Bach. Topics to be considered include the role of music in the courts of Europe, the birth of opera, the rise of instrumental music, devotional music in the Catholic and Lutheran Church, performance practice, music and dance. Emphasis will be placed on music's cultural context in relation to the other humanistic disciplines.

**Schedule:** 12:30 pm - 01:20 pm T Th

**NEUROSCIENCE**

**NEU 202 Introduction to Cognitive Neuroscience**  
**Professor:** Sabine Kastner

**Description:** Cognitive neuroscience is a young and exciting field with many questions yet to be answered. This course surveys current knowledge about the neural basis of action, perception and cognition and will comprehensively cover topics such as high-level vision, music, attention, memory, language, executive function and tool use. Each topic will be introduced by a clinical case study as a guiding principle to relate neuroscience knowledge to real world scenarios. Precepts will discuss primary literature pertaining to topics covered in class with an emphasis on developing critical reading skills of the scientific literature.

**Schedule:** 01:30 pm - 02:50 pm M W
OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

ORF 307 Optimization
Professor: Robert J. Vanderbei

Description: Many real-world problems involve maximizing a linear function subject to linear equality and/or inequality constraints. Such problems are called Linear Programming (LP) problems. Examples include min-cost network flows, portfolio optimization, options pricing, assignment problems and two-person zero-sum games to name but a few. The theory of linear programming will be developed with a special emphasis on duality theory. Attention will be devoted to efficient solution algorithms. These algorithms will be illustrated on real-world examples such as those mentioned.

Schedule: 01:30 pm - 02:50 pm T Th

ORF 309 Probability and Stochastic Systems
Professor: Ramon van Handel

Description: An introduction to probability and its applications. Topics include: basic principles of probability; Lifetimes and reliability, Poisson processes; random walks; Brownian motion; branching processes; Markov chains

Schedule: 09:00 am - 09:50 am M W F

ORF 335 Introduction to Financial Mathematics
Professor: Ronnie Sircar

Description: Financial Mathematics is concerned with designing and analyzing products that improve the efficiency of markets and create mechanisms for reducing risk. This course introduces the basics of quantitative finance: the notions of arbitrage and risk-neutral probability measure are developed in the case of discrete models. Black-Scholes theory is introduced in continuous-time models, and credit derivatives and the term structure of interest rates are discussed, as well as lessons from the financial crisis.

Schedule: 01:30 pm - 02:50 pm M W

ORF 407 Fundamentals of Queueing Theory
Professor: William A. Massey

Description: This is an introduction to the stochastic models inspired by the dynamics of resource sharing. Topics discussed include: early motivating communication systems (telephone and computer networks); modern applications (call centers, healthcare operations, and urban planning for smart cities); and key formulas (from Erlang blocking and delay to Little's law). We also review supporting stochastic theories like equilibrium Markov chains along with Markov, Poisson and renewal processes.

Schedule: 03:00 pm - 04:20 pm T Th

PHILOSOPHY

PHI 201 Introductory Logic
Professor: Hans P. Halvorson

Description: Logic is the study of the principles of valid reasoning. This course provides an introduction to symbolic logic, which studies the principles of valid reasoning from an abstract point of view--paying attention to the form of valid arguments rather than their subject matter. We will cover the basic concepts and principles of symbolic logic: validity, logical truth, truth-functional and quantificational inference, formal languages and formal systems, axiomatic and deductive proof
PHI 203 Introduction to Metaphysics and Epistemology
Professor: Gideon A. Rosen

Description: An introduction to central questions of philosophy. Topics include: The rationality of religious belief, our knowledge of the external world, freedom of the will and the identity of persons over time.

Schedule: 10:00 am - 10:50 am M W

PHI 332 Early Modern Philosophy
Professor: Daniel Garber

Description: This course will focus on philosophy and the Scientific Revolution of the sixteenth and seventeenth centuries. We will read a mixture of philosophical and scientific texts, as well as some contemporary tests in the philosophy of science. We will discuss both the relations between science and philosophy, as well as the way these historical episodes are reflected in more recent philosophical literature.

Schedule: 02:30 pm - 03:20 pm M W

PHI 339 Philosophical Analysis Since 1950
Professor: Boris C. Kment

Description: A study of analytic philosophy in the second half of the 20th century. Topics include the later Wittgenstein, the ordinary language school of philosophy, Quine's naturalism in semantics and Kripke's reconceptualization of semantic and metaphysical categories.

Schedule: 12:30 pm - 01:20 pm T Th

PHYSICS

PHY 102 Introductory Physics II
Professor: Katerina Visnjic

Description: This course presents an introduction to the fundamental laws of nature, especially optics, electricity/magnetism, nuclear and atomic theory. These are treated quantitatively with an emphasis on problem solving. The laboratory is intended to give students an opportunity to observe physical phenomena and to gain "hands-on" experience with apparatus and instruments.

Schedule: 12:30 pm - 01:20 pm Th

POLITICS

POL 210 Political Theory
Professor: Anna B. Stilz

Description: This course explores ideas of individual ethics and political community, the ethics of political rule, freedom and slavery, democracy and representation, and equality and inequality in political thought. Readings will be drawn from both canonical and contemporary authors, including Sophocles, Machiavelli, Locke, Rousseau, and Tocqueville. This is an introductory course, which emphasizes both thematic and historical approaches to political theory, and its role in informing contemporary civic engagement.

Schedule: 11:00 am - 11:50 am M W

POL 307 The Just Society
Professor: Alan W. Patten

Description: An introduction to theories of social justice and examination of their implications in areas of contemporary social and political controversy. The first half of
the course introduces the problem of social justice and examines two classic positions, as articulated by John Locke (whose name is associated with liberalism, property, and capitalism) and Karl Marx (whose name is associated with the critique of capitalism). The second half of the course focuses on contemporary theories of justice. We will read authors such as John Rawls and Robert Nozick, and examine controversies over poverty, taxation, equal opportunity, and environmental justice.

Schedule: 02:30 pm - 03:20 pm T Th

POL 309 Politics and Religion
Professor: Jan-Werner Mueller

Description: Is there an affinity between particular religions and particular forms of politics? Is religion a necessary basis for any stable politics, as many canonical authors in the history of political thought asserted, or is it in fact a threat, as religion provokes strife and poses a danger to modern ideals of autonomy - including democracy? The course addresses such broad questions by engaging classic works as well as recent sociological writings, studies in comparative politics, and legal theories on politics and religion.

Schedule: 10:00 am - 10:50am T Th

POL 326 Constitutional Difficulties in the Age of Trump
Professor: Keith E. Whittington

Description: The unexpected election of Donald Trump in the fall of 2016 has ushered in a host of debates about less familiar features of the U.S. Constitution. A political outsider and populist, President Trump has pushed on inherited constitutional practices and assumptions. In an era of highly polarized politics, his opponents have likewise made innovative use of constitutional institutions and powers. The Trump presidency has generated unusual concerns about the stability and robustness of the American constitutional system. This course will try to make sense of those concerns and the constitutional debates of the past two years.

Schedule: 10:00 am - 10:50 am M W

POL 329 Policy Making in America
Professor: Charles M. Cameron

Description: This course provides a realistic introduction to how public policy is made in the United States. It examines how people (voters, activists, wealthy individuals, lobbyists, politicians, bureaucrats, and judges), organizations (interest groups, firms, unions, foundations, think tanks, political parties, and the media) and political institutions (Congress, the presidency, the bureaucracy, and the judiciary) come together to create and implement public policy. The course combines social science with cases, simulations, and role playing exercises to provide students with practical tools for real political analysis.

Schedule: 10:00 am - 10:50 am T Th

POL 330 Electing the President: Voter Psychology and Candidate Strategy
Professor: Markus Prior

Description: This class examines how election campaigns affect voters. The primary focus is on the nature of modern election campaigns and their impact on people's political reasoning and voting behavior. The class presents an overview of explanations for people's voting decisions, from stable long-term factors (such as partisan identification) to short-term term influences of the
campaign and media coverage. It illustrates that people's political behavior is best understood by examining those factors at different electoral levels, in different communication environments, and for different groups of people.

**Schedule:** 02:30 pm - 03:20 pm T Th

**POL 344 Race and Politics in the United States**  
**Professor:** LaFleur Stephens-Dougan

**Description:** This course examines various political controversies that surround the role of race and ethnicity in American society. These controversies and issues affect public opinion, political institutions, political behavior, and salient public policy debates. Thus this course will assess and evaluate the role of race in each of these domains while also examining historical antecedents. The first half of the course will focus on historical antecedents such as the civil rights movement and the Black Power movement. The second half of the course will focus on the nature of contemporary racial attitudes, in the 2008, 2012 and 2016 presidential elections.

**Schedule:** 11:00 am - 11:50 am T Th

**POL 351 The Politics of Development**  
**Professor:** Atul Kohli

**Description:** This course will focus on the state's role in promoting economic growth and distribution in the developing world. The core organizing question for the course is: why have some regions of the developing world been more successful at industrialization and/or poverty alleviation than other regions? The students will learn about the patterns of development in Asia, Africa and Latin America, with special attention to such countries as China, India, South Korea, Nigeria and Brazil. General challenges that face all developing countries -- globalization, establishing democracy and ethnic fragmentation -- will also be analyzed.

**Schedule:** 01:30 pm - 02:20 pm T Th

**POL 360 Social Movements and Revolutions**  
**Professor:** Mark R. Beissinger

**Description:** This course investigates the politics of protest and revolution, examining the conditions under which protest movements emerge, their choice of protest tactics, the effects of repression and concessions, and the determinants of movement success. The second part of the course focuses on revolutions, examining the forms that they assume and the conditions under which they develop and prove successful. Examples discussed include the civil rights, women's and environmental movements; the French, Russian, and Iranian revolutions; the collapse of communism; and the "colored" revolutions and other waves of revolution in the contemporary world.

**Schedule:** 02:30 pm - 03:20 pm M W

**PSYCHOLOGY**

**PSY 207 Psychopathology**  
**Professor:** Megan E. Spokas

**Description:** Survey of different types of abnormal behaviors and different models of explanation. Students will come to understand the conflicting viewpoints and treatment approaches that characterize the clinical field, and will understand what is presently known and not known about abnormal functioning.

**Schedule:** 10:00 am - 10:50 am M W
PSY 210 Foundations of Psychological Thought  
**Professor:** Susan L. Sugarman

**Description:** An exploration of original texts in the history of thought about the workings of the human mind starting in Antiquity and leading to the development of the empirical discipline of psychology in the 19th century and some of its modern trends. Selections from Aristotle, Stoics, Epicureans, Descartes, Hobbes, Spinoza, Hume, Kant, Rousseau, Mill, Herbart, Wundt, James, Nietzsche, Freud. Subsequent developments, including the child study movement, are explored though 20th century writings, culminating with Sartre's philosophical psychology and sources in Eastern thought to put the Western trajectory in perspective.

**Schedule:** 10:00 am - 10:50 am T Th

PSY 252 Social Psychology  
**Professor:** Diana I. Tamir

**Description:** The scientific study of social behavior, with an emphasis on social interaction and group influence. Topics covered will include social perception, the formation of attitudes and prejudice, attraction, conformity and obedience, altruism and aggression, and group dynamics.

**Schedule:** 11:00 am - 11:50 am M W

PSY 309 Psychology of Language  
**Professor:** Adele E. Goldberg

**Description:** The cognitive processes underlying the use and understanding of language, and in learning to speak. Topics include speech production and perception, grammar and meaning, knowledge and words, and pragmatic aspects of language.

**Schedule:** 11:00 am - 12:20 pm M W

PSY 317 Health Psychology  
**Professor:** Nicole M. Avena

**Description:** The objectives of this course are to understand the bio-psycho-social processes that influence health-related behaviors, health and wellness, and health-care delivery. Topics to be examined are the psycho-physiological and socio-cultural bases of health and illness; pain; adaptation to chronic illness; stress; personality and illness; death, dying, and grief; substance use; obesity and nutrition; health promoting behaviors; patient adherence; physician-patient communication; and health care utilization.

**Schedule:** 11:00 am - 11:50 am T Th

PSY 345 Sensation and Perception  
**Professor:** Jonathan W. Pillow

**Description:** This course will provide an introduction to the scientific study of sensation and perception, the biological and psychological processes by which we perceive and interpret the world around us. We will undertake a detailed study of the major senses (vision, audition, touch, smell, taste), using insights from a variety of disciplines (philosophy, physics, computer science, neuroscience, psychology) to examine how these senses work and why. We will begin with physical bases for perceptual information (e.g., light, sound waves) and proceed to an investigation of the structures, circuits, and mechanisms by which the brain forms sensory percepts.

**Schedule:** 10:00 am - 10:50 am T Th
RELIGION

REL 215 A Survey of some theologies in the Middle Ages
Professor: Denys A. Turner

Description: A survey of themes central to theologies in the period from Augustine to the end of the Middle Ages, issues of theological method, genre, and linguistic medium; doctrines of God, the Trinity, Incarnation and grace; the place of the Bible and its interpretation in medieval theology. Throughout all of these, it will be necessary to bear in mind in general terms, and explore in each of these texts in some detail, a series of overarching, and governing, connections: between the theological and the 'mystical', contemplation and action, intellectual enquiry and holiness, knowledge and love.

Schedule: 02:30 pm - 03:20 pm M W

REL 226 The Religions of China
Professor: Stephen F. Teiser

Description: A thematic introduction to Chinese religion, ranging from ancient to contemporary. The first half focuses on classics of Chinese thought (Book of Changes, Analects of Confucius, Laozi's Dao de jing, etc.); the second half utilizes ethnography and history to consider topics such as cosmology, ancestors, gods and saints, mythology, ethics, divination, gender, and ritual.

Schedule: 10:00 am - 10:50am M W

REL 251 Christianity in the Roman Empire: Secret Rituals, Mystery Cults, and Apocalyptic Prophets
Professor: Matthew Larsen, AnneMarie Luijendijk

Description: How did Jesus' earliest followers interpret his life and death?

REL 275 Religion and Social Change in Early Latin America
Professor: Jessica Delgado

Description: In this course, we will grapple with the many paradoxes in the historical role of "religion" in people's lives and society in colonial Latin America. Subjects will include: religious change; Native American cosmologies; Indigenous Christianities; women and men's daily encounters with church institutions and their participation in devotional culture; historical dynamics of race, gender, and spiritual status; and the changing relationship between the church and state.

Schedule: 01:30 pm - 02:20 pm T Th

REL 357 Religion in Colonial America and the New Nation
Professor: Seth A. Perry

Description: This class covers the history of religion in America from European contact through the 1840s or so. Emphasis will be on primary readings, organized chronologically around a few recurrent themes: contact
and exchange; authority and dissent; the relationship between theological reasoning and everyday life. We'll pay particular attention to changing conceptions of religion's role in social organization and competing religious views of human nature over time.

Schedule: 11:00 am - 11:50 am T Th

SLAVIC LANGUAGES AND LITERATURES

SLA 220 The Great Russian Novel and Beyond: Dostoevsky, Tolstoy, Chekhov, and Others
Professor: Ellen B. Chances

Description: An examination of significant trends in Russian literature from the 2nd half of the 19th century to the Russian Revolution and a bit beyond. The course focuses on many masterpieces of 19th & 20th-century Russian literature. The works (mostly novels) are considered from a stylistic point of view and in the context of Russian historical and cultural developments. The course also focuses on questions of values and on the eternal "big questions" of life that are raised in the literature. Authors read include Turgenev, Dostoevsky, Tolstoy, Chekhov, Bely, Nabokov, and Kharms.

Schedule: 01:30 pm - 02:20 pm M W

SLA 305 Roma (Gypsies) in Eastern Europe: The Dynamics of Culture
Professor: Margaret H. Beissinger

Description: "Roma (Gypsies) in Eastern Europe" treats Romani history, cultural identity, folklore, music, religion, and representations in literature and film. Roma have been enslaved, targeted for annihilation, and persecuted for centuries. Yet they have repeatedly adapted and adjusted to the circumstances surrounding them, persisting as distinctive ethnic communities while simultaneously contributing to and forming part of the dominant worlds in which they live. This course offers novel perspectives on ethnic minorities and the dynamics of culture in Slavic and East European society.

Schedule: 11:00 am - 12:20 pm M W

STATISTICS & MACHINE LEARNING

SML 201 Introduction to Data Science
Professor: Michael Guerzhoy

Description: Introduction to Data Science provides a practical introduction to the burgeoning field of data science. The course introduces students to the essential tools for conducting data-driven research, including the fundamentals of programming techniques and the
essentials of statistics. Students will work with real-world datasets from various domains; write computer code to manipulate, explore, and analyze data; use basic techniques from statistics and machine learning to analyze data; learn to draw conclusions using sound statistical reasoning; and produce scientific reports. No prior knowledge of programming or statistics is required.

**Schedule:** 11:00 am - 12:20 pm T Th

**SOCIOLOGY**

**SOC 207 Poverty in America**  
**Professor:** Matthew Desmond

**Description:** This course investigates poverty in America in historical and contemporary perspective. We will explore central aspects of poverty, including low-wage work and joblessness, housing and neighborhoods, crime and punishment, and survival and protest. Along the way, we will examine the cause and consequences of poverty; study the lived experience of severe deprivation and material hardship; evaluate large-scale anti-poverty programs with an eye toward what worked and what didn't; and engage with normative debates about the right to housing, living wages, just punishment, and other matters pertaining to American life below the poverty line.

**Schedule:** 10:00 am - 10:50 am M W

**SOC 302 Sociological Theory**  
**Professor:** Ekedi A. Mpondo-Dika

**Description:** This course takes a close look at foundational texts and critical concepts in the discipline of sociology, from the 19th-century 'classics' to contemporary theorists who have inspired important research agendas. Our two main goals will be a) to engage critically with authors and ideas, and b) to help you develop your own 'sociological eye' and theoretical skills. Key authors will include Marx, Durkheim, Weber, Simmel, DuBois, and Bourdieu. We will give special attention to processes of domination, economic exchange, racialization, and emotion. Whenever possible, we will apply theories and concepts to contemporary events and issues.

**Schedule:** 11:00 am - 11:50 am T Th

**SOC 369 Class and Culture**  
**Professor:** Timothy J. Nelson

**Description:** Examines the cultures of classes within American society and asks to what extent people's identities, relationships, or chances for social mobility are shaped by their class culture. Looks at high and popular culture as well as mass media, paying attention to patterns of cultural consumption ('taste') and asks how these patterns work to reproduce the class structure.

**Schedule:** 11:00 am - 11:50 am M W

**PROGRAM IN URBAN STUDIES**

**URB 201 Introduction to Urban Studies**  
**Professor:** M. Christine Boyer

**Description:** This course will examine different crises confronting cities in the 21st century. Topics will range from informal settlements, to immigration, terrorism, shrinking population, sprawl, rising seas, affordable housing, gentrification, smart cities. The range of cities will include Los Angeles, New Orleans, Paris, Logos, Caracas, Havana, New York, Hong Kong, Dubai among others.
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WWS 200 Statistics for Social Science
Professors: Mark W. Watson

Description: The course is an introduction to probability and statistical methods for empirical work in policy analysis. Probability, sampling, and statistical inference associated with the linear regression model will be covered, along with related topics. Students carry out empirical analysis related to several policy questions.

Schedule: 01:30 pm - 02:50 pm W

WWS 300 Microeconomics for Public Policy
Professor: Marc Fleurbaey

Description: Microeconomics is the study of how the economy works as a result of myriad decisions by individual agents (households, firms), in interaction among themselves and with public authorities. This course, taught at the intermediate level, starts from public policy issues (the design of well-being indicators, tax rules, health care policy, education, competition regulation, environment protection) and introduces the concepts with which economists analyze the success and failures of the market economy, the reasons for public intervention and the effects of policy.

Other: Students should have a working knowledge of single-variable calculus.

Schedule: 10:00 am - 10:50 am M W

WWS 301 International Trade
Professor: Gene M. Grossman

Description/Objectives: This course examines the causes and consequences of international trade. We investigate why nations trade, what goods they export and import, and who gains and loses from trade. We then focus on economic and political motives for countries to regulate international trade and examine the economic effects of trade policies. Topics will include the connection between globalization and wage inequality, the effects of the "China shock" on the U.S. economy and politics, the implications of global value chains, the motivation for trade agreements, and the implications of recent events such as BREXIT and the US-Mexico-Canada Free Trade Agreement.

Other: Students should have a working knowledge of single-variable calculus and introduction to microeconomics.

Schedule: 11:00 am - 12:20 pm T Th

WWS 315 Grand Strategy
Professor: Aaron L. Friedberg

Description: Grand strategy is the broad and encompassing policies and undertakings that political leaders pursue-financial, economic, military, diplomatic-to achieve their objectives in peacetime and in war. This course will examine the theory and practice of grand strategy both to illuminate how relations among city-states, empires, kingdoms and nation states have evolved over the centuries and also to identify some common challenges that have confronted all who seek to make and execute grand strategy from Pericles to Barack Obama.

Schedule: 01:30 pm - 02:50 pm W

WWS 330 Population, Society and Public Policy
Professor: Arun Hendi

Description: Are large populations a

**Schedule:** 10:00 am - 10:50 am M W

**WWS 331 Race and Public Policy**  
**Professor:** Douglas S. Massey

**Description:** Analyzes the historical construction of race as a concept in American society, how and why this concept was institutionalized publicly and privately in various arenas of U.S. public life at different historical junctures, and the progress that has been made in dismantling racialized institutions since the civil rights era.

**Schedule:** 11:00 am - 11:50 am M W

**WWS 350 The Environment: Science and Policy**  
**Professors:** Jin Sato , David S. Wilcove

**Description:** This course examines the ways US and international environmental policies adopt, interpret and otherwise accommodate scientific information. The course focuses on case studies that provide insights into the policy interactions that emerge from managing natural resources and environmental risk. Topics include climate change, nuclear power, the fate of the world's forests and ecosystem services, and global trade in wildlife, along with institutional issues such as the role of the state and community in policy formulation. Students will explore both the science underlying these issues as well as current policies.

**Schedule:** 10:00 am - 10:50 am M W

**WWS 351 Information Technology and Public Policy**  
**Professor:** Edward W. Felten

**Description:** New technologies have changed the way we communicate with each other and learn about our world. They have also raised public policy dilemmas in every area they touch: communications, regulation, privacy, national security, intellectual property and many others. This course aims to help students understand the technology behind the Internet; the social science concepts and research that illuminate the likely effects of policy options; and tradeoffs among fundamental values that different policy options imply.

**Schedule:** 11:00 am - 11:50 am T Th