

# Freshman Seminars

SPRING 2016

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## Sector I - Society

### Desire and Demand

**Marilynne Diggs-Thompson**, House Dean, Riepe College House

Does consumption shape culture or does culture shape consumption? As even the most mundane purchase becomes socially symbolic and culturally meaningful, we can persuasively argue that the concept of "need" has been transformed. Analyzing a variety of physical and virtual consumer venues, the goal of this seminar is to understand and to analyze historical and contemporary issues related to a culture of consumption. We investigate social and political-economic factors that impact when and how people purchase goods and argue that behavior attached to consumption includes a nexus of influences that may change periodically in response to external factors. Readings and research assignments are interdisciplinary and require a critical analysis of global/local linkages. The city of Philadelphia becomes the seminar's laboratory as we ask how have issues of culture, consumption, and global capitalism become intertwined around the world?

Cultural Diversity in the U.S.

ANTH 086 301

Monday | 2:00 p.m. to 5:00 p.m.

### Global Ethics

**Kok-Chor Tan**, Professor of Philosophy

This seminar explores the central philosophical problems of global ethics. What are our duties to respond to world poverty and what is the basis of this duty? Is global inequality in itself a matter of justice? How universal are human rights? Should human rights defer to cultural claims at all? What is the moral status of state sovereignty? Is there a right to intervene in another country to protect human rights there? Indeed can intervention to protect human rights ever be a duty? Who is responsible for the environment? We will read some influential contemporary essays by philosophers on these topics with the goal of furthering our own understanding of these problems.

PHIL 073 301

Tuesday and Thursday | 10:30 a.m. to 12:00 p.m.

### Race, Crime & Punishment

**Marie Gottschalk**, Professor of Political Science

Why are African-Americans and members of other historically disadvantaged groups disproportionately incarcerated and subjected to other penal sanctions in the United States? What are the political, social, and economic consequences for individuals, communities, and the wider society of mass incarceration in the United States? What types of reforms of the criminal justice system are desirable and possible?

This freshman seminar analyzes the connection between race, crime, punishment, and politics in the United States. The primary focus is on the role of race in explaining why the country's prison population has exploded since the early 1970s and why the United States today has the highest incarceration rate in the world.

The class will likely take field trips to a maximum-security jail in Philadelphia and to a state prison in the Philadelphia suburbs.

Cultural Diversity in the U.S.

PSCI 010 401 AFRC 010 401

Tuesday | 1:30 p.m. to 4:30 p.m.

### **Feith Family Seminar: Sociology of Religion**

**Herb Smith**, *Professor of Sociology*

Most of us are pretty good amateur sociologists, because sociology is the study of human society, human society is people organized in groups (families, churches, clubs, schools, civic associations, nation-states) and their relations with one another (people with people, people with groups or institutions)... we're all "doing it" at one level or another. It is also the case that sociology -- the subject, the field, the science -- provides some useful tools for understanding how society operates, and a sociological perspective can teach us some things that are not obvious from our day-to-day participation in social life. So this is a course about the sociology of religion, a subject that has a lot to do with belief, with meaning, and with the very organization of society itself; and we will learn a lot about religion, from a sociological perspective (to what extent is belief an individual versus a social phenomenon? where do new religions -- sects -- come from and how do they become churches? Why does religion sometimes thrive and other times drift into the background?).... But it is also a way to introduce college freshmen to sociology and the sociological perspective; to fundamental issues in the social sciences;-- and this is the great advantage of a freshman seminar -- to the responsibilities and rewards of intellectual life at a university.

SOCI 041 301

Wednesday | 2:00 p.m. to 5:00 p.m.

### **Poverty and Inequality**

**Regina Baker**, *Assistant Professor of Sociology*

What does it mean to live in poverty in the land of plenty? In this seminar, we will explore this question and others related to poverty in contemporary America. We will discuss topics such as poverty measurement, current poverty trends, the causes of poverty, and poverty-related outcomes. We will also consider inequalities in other related domains (e.g., the labor market, health, family, education, and the justice system) and how they help produce, maintain, and reproduce poverty and inequality. Throughout the semester, we will consider the roles of race/ethnicity, gender, age, and place. Lastly, we will examine anti-poverty policy programs in the U.S, their effectiveness, and how they compare to programs in other countries. To encourage engaged class discussions, students will complete short weekly response papers regarding course readings.

Cultural Diversity in the U.S.

SOCI 041 302

Tuesday and Thursday | 1:30 p.m. to 3:00 p.m.

## Sector II - History & Tradition

### From Galen to Galileo: Science Before The Scientific Revolution

**Ann Moyer**, Associate Professor of History

In this course we will examine scientific learning and practice from the time of the Greeks and Romans to the age of Galileo, the beginning of the "Scientific Revolution." Not only will we discuss basic theories and knowledge, but we will also raise broader questions about science and society:

- What have terms such as "science" or "natural philosophy" meant to people?
- In what settings in society have people studied and practiced science?
- How did scientific learning relate to fields such as religion and magic?
- What factors have led to change and innovation?

No technical background is needed for this course.

HIST 101 301

Tuesday | 1:30 p.m. to 4:30 p.m.

### How to Rule an Empire: an Introduction to European and U.S. Imperialism

**Amy Offner**, Assistant Professor of History

During the nineteenth and twentieth centuries, US and European powers developed changing strategies of empire designed to order societies at home and overseas. The practice of empire spurred worldwide debates that continue today: how did imperialism operate, what purposes did it serve, could it come to an end, and what might replace it? Over the course of two hundred years, these questions inspired some of the world's greatest fiction writing and historical research, and this seminar introduces students to a sample of classic texts. Together we'll examine varied forms of political, economic, and cultural power involved in imperial expansion; the experience and consequences of empire for both colonized and colonizer; and the emergence of anti-imperialist movements.

HIST 106 301

Thursday | 1:30 p.m. to 4:30 p.m.

### Making Meaning in Local, Global, and Historical Perspectives

**Annette Reed**, Associate Professor of Religious Studies

**Open only to students enrolled in this seminar in Fall 2015.**

This for-credit Residential Program, directed by Annette Yoshiko Reed and Benjamin Fleming, explores the ways in which people around the world make meaning in their lives and communities. We will survey religious, artistic, and philosophical traditions from around the world drawing especially on the rich resources here in Philadelphia. Field trips will include chances to see ancient artifacts and medieval manuscripts from Asian, European, and Middle Eastern world cultures; visits to local museums, art galleries, temples, churches, mosques, and synagogues; and opportunities to engage the local histories of communities in West Philadelphia. Guest speakers, films, novels, and other readings will cover different cross-cultural and historical approaches to sanctifying time and space, understanding the human condition, and creating meaning as individuals and communities. Program participants receive course credit through enrollment in the associated Freshman Seminar (full-year; 1 c.u. total; 0.5 per semester).

For more information see [http://fh.house.upenn.edu/Making\\_Meaning](http://fh.house.upenn.edu/Making_Meaning)

RELS 035 301

Friday | 1:00 p.m. to 3:00 p.m.

## Sector III - Arts & Letters

### Spiegel-Wilks Seminar in Contemporary Art: On The Eccentric Edges of Art

**Aaron Levy**, *Senior Lecturer in the History of Art and in English; Executive Director of the Slought Foundation*

This course will explore a series of essential yet overlooked moments in the history of the post-1960 American avant-garde that expand our conception of art, objecthood, and arts institutions. In particular, we will revisit three artworks that were never completed by the artists during their lifetimes—Dennis Oppenheim's unfinished work "Protection," Lebbeus Woods' "Tales from the Tectonic Forest," and Krzysztof Wodiczko's "City Hall Tower Illumination"—all of which raise fundamental questions concerning authorship, preservation, and cultural responsibility. In addition to studying these works, the students will be invited to interact with artists, estates, scholars, curators, educators and historians to research how these past artworks might be curatorially restaged and installed at Slought and Penn in late Spring 2016. Through their participation, the students will give these works new social, cultural and political resonance and help grant the works a further or secondary life.

ARTH 100 401 ENGL 016 401

Tuesday and Thursday | 12:00 p.m. to 1:30 p.m.

### Blood, Sweat, and Pasta

**Frank Pellicone**, *House Dean, Harrison College House*

In this course we will explore the literature of the Italian/American experience. Starting from the shores of Italy, we will chart various literary odysseys from abject poverty to suburban comfort.

We will read the works of a wide-range of authors and genres, such as:

Pascal D'Angelo (*Son of Italy*), Leonardo Sciascia (*The Long Crossing*), John Fante (*Ask The Dust and Full of Life*); Mario Puzo (*The Fortunate Pilgrim*); Pietro di Donato (*Christ in Concrete*); Jerre Mangione (*Mount Allegro*); Helen Barolini (*Umbertina*), Francine Prose (*Household Saints*), Albert Innaurato (*Gemini*), and short stories by various Italian/American authors.

We will also discuss the transgression and transformation achieved through the creation of a distinct, Italian/American literary tradition. Foregrounding our conversation in the sociopolitical realities of late eighteenth century Italy and the United States, we will work collectively to maintain the presence of Italian/American contributions within the Academy. As a foil to the literary works that we discuss, we will consider the proliferation of Italian/American stereotypes in popular American culture of ruthless gangsters, lovable buffoons, irresistible lovers, and claustrophobic families.

ENGL 015 402 CIMS 015 402

Monday and Wednesday | 3:30 p.m. to 5:00 p.m.

### Trauma, Time, Fiction

**Paul Saint-Amour**, *Associate Professor of English*

Bombs rising into planes; smoke returning to smokestacks; a wound that gives pain in advance of its infliction. Why do so many novels about historical mass-trauma involve time-travel or reversals in chronology and causality? Can such works constitute a flight from mass-violence? Can they, contrastingly, participate in collective mourning for trauma? How does narrative theory help us with looping, quantum, and preposterous fiction? And how do we understand the political, ethical, and psychological work of alternate history novels, which explore historical timelines

that differ from our own (e.g., a history in which F.D.R. was assassinated before World War II)? Readings to include fiction by Martin Amis, Octavia Butler, Samuel Delany, Philip K. Dick, Philip Roth, D. M. Thomas, and others; essays by contemporary theorists of trauma and narrative.

ENGL 016 301

Monday and Wednesday | 2:00 p.m. to 3:30 p.m.

### Medieval Worlds

**Emily Steiner**, *Professor of English*

We twenty-first century folk pride ourselves on thinking “globally” and having at our fingertips information about all people, places, and times. How did people before c.1600 imagine the whole world? In this course we read a variety of medieval and early modern texts that try to take the whole world into account. We will trace the geographical and cultural imaginations of early writers across different genres, from maps, to Islamic, Jewish, and Christian travel narratives, such as the voyages of Marco Polo; to fictive ethnography, such as the account of John de Mandeville (one of Christopher Columbus's favorite writers); to monstrous encyclopedias and books of beasts, such as the *Wonders of the East*; to universal chronicles and crusader romances. Assignments will include weekly responses, an oral presentation, and a final project. We will also have the great opportunity to study medieval manuscripts and early rare books in the Penn collection.

Cross-Cultural Analysis

ENGL 016 302

Thursday | 1:30 p.m. to 4:30 p.m.

## The Fantastic Voyage from Homer to Science Fiction

**Scott Francis**, Assistant Professor of Romance Languages

Tales of voyages to strange lands with strange inhabitants and even stranger customs have been a part of the Western literary tradition from its inception. What connects these tales is that their voyages are not only voyages of discovery, but voyages of self-discovery. By describing the effects these voyages have on the characters who undertake them, and by hinting at comparisons between the lands described in the story and their own society, authors use fantastic voyages as vehicles for incisive commentary on literary, social, political, and scientific issues.

In this course, we will explore the tradition of the fantastic voyage from *Homer's Odyssey*, one of the earliest examples of this type of narrative and a model for countless subsequent voyage narratives, to science fiction, which appropriates this narrative for its own ends. We will determine what the common stylistic elements of voyage narratives are, such as the frame narrative, or story-within-a-story, and what purpose they serve in conveying the tale's messages. We will see how voyagers attempt to understand and interact with the lands and peoples they encounter, and what these attempts tell us about both the voyagers and their newly-discovered counterparts. Finally, we will ask ourselves what real-world issues are commented upon by these narratives, what lessons the narratives have to teach about them, and how they impart these lessons to the reader.

Readings for this course, all of which are in English or English translation, range from classics like the *Odyssey* and *Gulliver's Travels* to predecessors of modern science fiction like Jules Verne and H. G. Wells to seminal works of modern science fiction like Pierre Boulle's *Planet of the Apes*, Karel Čapek's *War with the Newts*, and Stanislaw Lem's *Solaris*. Though this course is primarily dedicated to literature, we will also look at how films like the 1968 adaptation of *Planet of the Apes* and television shows like *Star Trek*, and *Futurama* draw upon literary or cinematic models for their own purposes.

This course is meant not only for SF fans who would like to become better acquainted with the precursors and classics of the genre, but for all those who wish to learn how great works of fiction, far from being intended solely for entertainment and escapism, attempt to improve upon the real world through the effect they have on the reader.

FREN 200 401 COML 200 401

Tuesday and Thursday | 1:30 p.m. to 3:00 p.m.

## Sector IV - Humanities & Social Sciences

### Villa Gardens and Villa Life: Cultural and Social Transformations

**Raffaella Fabiani Giannetto**, Assistant Professor of Landscape Architecture

An examination of the idea of *villeggiatura* (villa life) and the ideology associated with countryside gardens and plantations. In the literature on villa gardens across the centuries, from ancient Rome to the 20th century, there emerges a recurrent opposition between the country seen as an occasion for self-improvement versus it being an opportunity for self-indulgence, the representation of social status, and at times the display of opulence and political power. The first instance, which has its roots in the Stoic understanding of agricultural labor as a means of purification and moral gratification, is traceable to the times of the early agricultural writers, Cato and Varro, and re-emerges in the classical culture of early Renaissance Florence and the pre-Palladian villa culture of the Veneto to end with its latest occurrence at the time of Jefferson and the so-called gentlemen farmers in colonial America. The second instance, whose earliest example in the West dates to the time of Imperial Rome, resurfaces in Augustan England, and finds its apotheosis with the great mansions built by American industrialists at the turn of the 20th century.

ARCH 112 301

Monday and Wednesday | 2:00 p.m. to 3:30 p.m.

## The Queer Novel and the Marriage Plot

**Heather Love**, *Associate Professor of English*

The 2014 U.S. Supreme Court decision legalizing same-sex marriage combined an assertion of the constitutional rights of gays and lesbians with an idealizing view of marriage. The decision reads: "No union is more profound than marriage, for it embodies the highest ideals of love, fidelity, devotion, sacrifice, and family. In forming a marital union, two people become something greater than once they were. As some of the petitioners in these cases demonstrate, marriage embodies a love that may endure even past death." These words echo a long narrative tradition that describes love as the greatest human value and marriage as its ultimate consummation. In this course, we will consider this tradition (the "marriage plot") and its permutations in the modern queer novel. Queer novels tend to represent love as an obsession or a tragic impossibility, and they often take a dark view of marriage. In readings from the nineteenth century to the present, we will explore the narrative forms that developed during a period when same-sex marriage was unthinkable, and will consider the meaning of these texts in the light of recent legislative and social changes. In addition to a handful of essays in queer and feminist theory, readings by: Jane Austen, Herman Melville, Thomas Mann, Willa Cather, Nella Larsen, Sylvia Townsend Warner, Radclyffe Hall, Djuna Barnes, Carson McCullers, Jane Bowles, Patricia Highsmith, James Baldwin, Shyam Selvadurai, and Maggie Nelson.

ENGL 015 401 GSWS 017 401

Wednesday | 2:00 p.m. to 5:00 p.m.

## Music in Troubled Places

**Jim Sykes**, *Assistant Professor of Music*

In this class we go beyond the headlines to discuss the history and cultures of peoples who have had to endure terrible suffering through genocide, ethnic conflict, civil war, and various other sorts of armed conflict. We will focus on a curious phenomenon: populations typically defined as separate from one another (think: Israelis and Palestinians) often have a history of shared or related cultural practices, of which music is a prime example. In this class we will survey a number of current and recent conflict zones and use music as a way to deepen our understanding of the identities and relationships between the peoples involved in each conflict. In the process, we will consider the role of the arts in forging peace, but we will also explore how music and sound play roles in fomenting violence. Regions to be covered include: Afghanistan, Iraq, Syria (including relevant musics in Turkey and Kurdistan), Israel-Palestine, Sri Lanka, India, the former Yugoslavia, Sudan, Rwanda, Sierra Leone, South Korea and the Pacific (WWII), Cambodia, Guatemala, Mexico, and the United States (inner city Chicago and Cuban-U.S. musical relations). Each session will have a reading and musical examples.

MUSC 018 301

Wednesday | 2:00 p.m. to 5:00 p.m.

## Music in Urban Spaces

**Molly McGlone**, *Assistant Dean for Academic Advising*

**Open only to students enrolled in this seminar in Fall 2015.**

Music in Urban Spaces explores the ways in which individuals use music in their everyday lives and how music is used to construct larger social and economic networks that we call culture. We will read musicologists, cultural theorists, urban geographers, sociologists and educators who work to define urban space and the role of music and sound in urban environments, including through music education. While the readings make up our study of the sociology of urban space and the way we use music in everyday life to inform our conversations and the questions we ask, it is within the context of our personal experiences working with music programs at West Philadelphia High School or Henry C Lea Elementary, both inner city neighborhood schools serving economically disadvantaged students, that we

will begin to formulate our theories of the contested musical micro-cultures of West Philadelphia. This course is over two-semester where students register for .5cus each term (for a total of 1cu over the entire academic year) and is tied to the Music and Social Change Residential Program in Fisher Hassenfeld (<http://fh.house.upenn.edu/musicandsocialchange>) where most class participants live together. All participants volunteer in music classrooms for 3 hours per week, are expected to go to at least two concerts in the community during the year, attend the seminar weekly and complete all assignments.

Cultural Diversity in the U.S.

MUSC 018 401 URBS 018 401

Friday | 2:00 p.m. to 4:00 p.m.

### **Beyond Biology--Enhancing the Human Mind through Technology**

**Gary Purpura**, *Assistant Dean for Academic Advising*

Transhumanists seek to extend capacities of the human mind beyond the bounds of the human brain and body through technology. Indeed, for them, such an extension of human thinking and feeling represents the next big step in human cognitive evolution. In this course, we will examine the philosophical conception of a mind that underpins this movement to extend the human mind beyond human biology. Through an examination of the hypothesis that there can be non-biological thinking and feeling, we consider whether technologies that enable or enhance human mental faculties might one day completely supplant the biological machinery of the human body. We will also consider the moral issues surrounding the creation of transhumans. The questions that we consider in this course will get to the heart of what it means to possess a human mind and indeed to be a human being.

PHIL 032 301

Monday and Wednesday | 3:30 p.m. to 5:00 p.m.

## **Sector V - Living World**

### **Forensic Neuroscience**

**Daniel Langleben**, *Associate Professor of Psychiatry, Perelman School of Medicine*

Legal systems have attempted to evaluate and measure human behavior long before psychology, psychiatry and neuroscience were scientific disciplines. Current legal systems rely on behavioral science in both criminal and civil litigation. For example, intent is a prerequisite of criminal responsibility, motive is used to identify likely suspects, and mental illness or cognitive ability can be a defense to crime or a mitigating factor in a death penalty determination as well as a reason to deny a parent custody of a child. In the last decade, there has been substantial progress in behavioral neuroscience; a development not lost on the court system. Brain imaging techniques--such as functional and structural Magnetic Resonance Imaging and Positron Emission Tomography--have become part of all phases of legal proceedings and have forced courts to reconsider the use of behavioral science and the role of juries in courtroom decision-making. The goal of this course is to enable students to understand the present and the potential future role of behavioral neuroscience evidence in the justice system. The introductory part of the course will provide students with a very basic introduction to the judicial system and courtroom evidence and to the behavioral neuroscience constructs and techniques that are critical to law, such as motivation, violence, empathy, deception and morality. Students will then be asked to critically evaluate the use of brain imaging and other quantitative neuroscience techniques as evidence in representative legal cases. For each case studied, small teams of students will be assigned to serve as neuroscience advisors on each side of the case and will argue the strengths and weaknesses of the neuroscience evidence at issue. Students will be asked to prepare written arguments outlining the neuroscience evidence, present their arguments in class, and defend them against the opposing team. Case presentations will be followed by class and instructor comments. Performance evaluation will be based on students' oral case presentation



(40%) and the written term paper (60%) developed from their case presentation. Through this course, students will learn the basic concepts in behavioral neuroscience, medical imaging and scientific legal evidence, and will develop the ability to critically evaluate neuroscience data in forensic and legal settings. This course is open to all undergraduate students and will be of particular interest to students with interest in law, neuroscience, criminology and psychology. Background in science or biology is helpful but is not required.

BIBB 050 301

Wednesday | 3:00 p.m. to 6:00 p.m.

### Music and the Brain

**Michael Kaplan**, *Lecturer in the Biological Basis of Behavior*

Every human culture that has ever been described makes some form of music. The musics of different cultures cover a wide range of styles, but also display fascinating similarities, and a number of features are shared by even the most disparate musical traditions. Within our own culture, music is inescapable - there are very few individuals who do not listen to some form of music every day and far more who listen to music virtually all day long. Appreciation of music comes very early: newborns prefer music to normal speech and mothers all over the world sing to their babies in a fundamentally similar way. And yet, despite this seeming ubiquity, the real origin and purpose of music remains unknown. Music is obviously related to language, but how? Why do so many cultures make music in such fundamentally similar ways? What goes into the formation of music "taste" and preferences? Does music have survival value, or is it merely "auditory cheesecake", a superfluous byproduct of evolution as some critics have maintained? What is the nature of musical ability and how do musicians differ from non-musicians? In this course, we will look for answers by looking at the brain. Almost 200 years of scientific research into brain mechanisms underlying the production and appreciation of music is beginning to shed light on these and other questions. Although the sciences and the arts are often seen as entirely separate, or even in opposition, studying the brain is actually telling us a lot about music, and studying music is telling us just as much about the brain.

BIBB 060 301

Tuesday and Thursday | 1:30 p.m. to 3:00 p.m.

### The Superbug Epidemic

**Hillary Nelson**, *Associate Professor of Biochemistry & Biophysics, Perelman School of Medicine*

The discovery of penicillin ushered in a new medical era - the antibiotic era - where patients no longer died from simple infections. We are now in a seemingly never-ending cycle of new antibiotics. However, the pipeline for antibiotics has slowed and we are rapidly entering the superbug era. We will use antibiotic resistance as a lens through which to understand the critical role that science plays in public health policy. At the end of the course, students should understand how these science-based public health decisions are made with the help of different stakeholders, which in this case include the government and healthcare system, basic and clinical scientists, the food industry and pharmaceutical companies, doctors and veterinarians, individuals and their communities.

BIOL 008 301

Tuesday and Thursday | 10:30 a.m. to 12:00 p.m.

## Sector VI - Physical World

### Honors Physics II: Electromagnetism and Radiation

**A. T. Johnson**, *Professor of Physics and Astronomy*

This course parallels and extends the content of PHYS 151, at a somewhat higher mathematical level. Recommended for well-prepared students in engineering and the physical sciences, and particularly for those planning to major in physics. Electric and magnetic fields; Coulomb's, Ampere's, and Faraday's laws; special relativity; Maxwell's equations, electromagnetic radiation.

Students must enroll in both the seminar (section 301, shown below) and one of the labs (302 or 303, below). The seminar meets for a fourth hour on:

Mondays from 2:00 p.m. to 3:00 p.m.

PHYS 171.302 (lab) | Tuesday | 3:00 p.m. to 5:00 p.m., or

PHYS 171.303 (lab) | Thursday | 3:00 p.m. to 5:00 p.m.

Quantitative Data Analysis

PHYS 171 301

Monday, Wednesday, and Friday | 10:00 a.m. to 11:00 a.m.

## Sector VII - Natural Sciences & Mathematics

### Structural Biology and Genomics

**Ponzy Lu**, *Professor of Chemistry*

Structural biology is the scientific method of describing, predicting and changing the properties of living organisms, including humans, based on "complete" genome chemical structures (sequence) and 3-dimensional structures of cellular components. The intellectual and technical revolutions that occurred during the 20th century made this possible. It is today's approach to understanding biology and solving problems in medicine. We will discuss how macroscopic biological properties, such as reproduction, locomotion and viral infection, are determined by the physics and chemistry of proteins and nucleic acids. Changes in biological function, in hereditary diseases like cystic fibrosis or sickle cell anemia, result from minute changes in individual proteins. Much larger changes in genome and protein structure are often tolerated without consequence. Understanding and exploiting these phenomena at the molecular level is the basis of new technology in the agricultural, energy and drug industries. The broad range of medical, social and political problems associated with the advances will be considered. We will attempt to distinguish real progress from fads and fashion. The weekly reading assignment will be Science and the Tuesday New York Times. This is a two-semester seminar with 0.5 credit unit each semester of the academic year.

CHEM 022 301

Tuesday and Thursday | 8:00 a.m. to 9:00 a.m.

### Structural Biology

**Ponzy Lu**, *Professor of Chemistry*

This course will explain in non-mathematical terms how essentially all biological properties are determined by the microscopic chemical properties of proteins. It will also explain how research results, especially those of structural biology, are presented to its various audiences.

CHEM 022 301

Tuesday and Thursday | 8:00 a.m. to 9:00 a.m.

## Seminars in Mathematics

### Proving Things: Algebra

**Shilin Yu**, *Hans Rademacher Instructor of Mathematics*

This course focuses on the creative side of mathematics, with an emphasis on discovery, reasoning, proofs and effective communication, while at the same time studying arithmetic, algebra, linear algebra, groups, rings and fields. Small class sizes permit an informal, discussion-type atmosphere, and often the entire class works together on a given problem. Homework is intended to be thought-provoking, rather than skill-sharpening.

Students must enroll in both the seminar (section 301, shown below) and one of the labs (101 or 102, below).

MATH 203.101 (lab) | Tuesday | 6:30 p.m. to 8:30 p.m., or

MATH 203.102 (lab) | Thursday | 6:30 p.m. to 8:30 p.m.

MATH 203 301

Monday, Wednesday, and Friday | 12:00 p.m. to 1:00 p.m.

### Math in the Age of Information

**Ted Chinburg**, *Professor of Mathematics*

This is a course about mathematical reasoning and the media. Embedded in many stories one finds in the media are mathematical questions as well as implicit mathematical models for how the world behaves. We will discuss ways to recognize such questions and models, and how to think about them from a mathematical perspective. A key part of the course will be about what constitutes a mathematical proof, and what passes for proof in various media contexts. The course will cover a variety of topics in logic, probability and statistics as well as how these subjects can be used and abused.

Quantitative Data Analysis

MATH 210 301

Tuesday and Thursday | 10:30 a.m. to 12:00 p.m.

## Other seminars open to freshmen (no sector)

### Vagelos Integrated Program in Energy Research (VIPER) Seminar, Part I

**Andrew Rappe/John Vohs**, *Professor of Chemistry/Professor of Chemical and Biomolecular Engineering*

This is the first part of the two-semester seminar designed to introduce students to the VIPER program and help them prepare for energy-related research. Research articles on various energy-related topics will be discussed, and students will be guided toward their research topic selection. Library research, presentation of data, basic research methods, research ethics, data analysis, advisor identification, and funding options will also be discussed. Sample energy topics discussed will include: Applications of nanostructured materials in solar cells; Solid oxide fuel cells; Global climate modeling: radiant heat transfer; Nanocrystal-based technologies for energy storage; Photo-bioreactor systems for mass production of micro-algae; Advanced rare earths separations chemistry; Modeling of oxides for solar energy applications; and Electronic transport in carbon nanomaterials.

VIPR 120 301

Tuesday | 11:00 a.m. to 12:00 p.m.