REVOLUTIONARY RESEARCH AND ACADEMIC INNOVATION

Since its founding as a colonial charter college in 1766, Rutgers University has linked academic innovation with revolutionary research in producing generations of scholars and leaders. With alumni such as Nobel Laureates Milton Friedman, Heinrich Rohrer, and Selman Waksman, and Pulitzer Prize winner Junot Díaz, Rutgers has a proven legacy of guiding its students to achieve their utmost. Designed to introduce first-year students to faculty research and to welcome those students to the life of the mind at Rutgers, the Byrne Seminars honors the University’s 250th anniversary by taking up Revolutionary Research and Academic Innovation as its theme for 2015–2016. Building on Rutgers’ long history, we celebrate the cutting-edge research that is produced on the New Brunswick campus. Our renowned faculty from across the disciplines, including 37 members of the National Academy of Science, the National Academy of Engineering, and the Institute of Medicine, are engaging with questions that will shape the twenty-first century in an array of fields. Through our nationally ranked programs in the humanities and liberal arts, our faculty address the imaginative, historical, and cultural dimensions of what it means to be human. From projects as diverse as spinal cord injury research, underwater robotic gliders, genetic engineering of plants, and restoration of one of the first films to feature an all-Native American cast, Rutgers professors lead in the production and application of knowledge through creative, practical, and innovative forms of research and teaching. In this moment of growth and success, we also look back at a rich history of excellence to recognize those who have contributed to this university’s intellectual fabric, making it what it is today—an integrated AAU research university and member of the Committee on Institutional Cooperation with leading programs across all schools. Growing over the centuries from a colonial college, to a land-grant institution, to the recent inclusion of the medical school, Rutgers continues to serve the needs of not only New Jersey, but the entire globe. At the center of that growth and development are the scholar-teachers who make up the faculty and who, through their scholarship and pedagogy, make Rutgers one of the top universities in the world. We invite you to share in the revolutionary research at Rutgers by joining Byrne Seminars for 2015-2016, and we look forward to celebrating together our university’s history, our exciting present, and our ever-expanding future.
WHAT ARE THE BYRNE SEMINARS?

Byrne Seminars are small, one-credit courses, limited to 20 students. Offered through the Office of Undergraduate Academic Affairs, these classes are taught by our world-renowned faculty, who come from departments and professional schools across the university. Each unique seminar offers students the chance to experience the excitement of original research, as faculty members share their curiosity, their intellectual passion, and how they develop new ideas and fields of knowledge. Some seminars take field trips, do hands-on research, or share a meal at the Rutgers Club. Seminars typically meet for 10 weeks, starting in the first week of each semester. You may take up to two Byrne courses in your first year, in consecutive semesters. The seminars are graded Pass/No Credit, and have no formal exams. Students may register for a one-credit seminar in addition to the 12-15 credit standard course-load; the seminars are not meant to compete with other courses.

HOW DO I SIGN UP?

You can register for a Byrne Seminar through WebReg starting in November. This catalog also includes section and index numbers for each spring seminar below the course description. You may find the Online Schedule of Classes useful in determining which courses are open and will best fit into your schedule. Enter subject code “090” and course number “101” to get a list of Byrne Seminars for the semester, including up-to-date information about time and location.

HAVE QUESTIONS?

Email Angela Mullis, Director at: byrneseminars@rutgers.edu / Call 848.932.6971
Or visit our website: WWW.BYRNE.RUTGERS.EDU

FROM THE CHANCELLOR

As we celebrate our 250th anniversary during the coming academic year, we will have so many opportunities to reflect on the history and legacy of this great university. From our revolutionary beginnings as one of the nation’s nine original Colonial Colleges, Rutgers has grown into a world-renowned, comprehensive public research university. To say that education has been transformed during this time is to state the obvious: our students and faculty are conducting cutting-edge research using state-of-the-art technology while collaborating in real time with colleagues around the world to address some of the most pressing issues of our time. Yet, I believe that the essence of education has remained remarkably unchanged—inspiring teachers igniting the intellectual passions of creative students, challenging them to become tomorrow’s leaders.

Thanks to the generous support of Dorothy and John J. “Jack” Byrne, we have built a first-year seminar program on this educational premise. Through the Byrne Seminars, incoming students are given the opportunity to study with our world-class faculty in small, discussion-based seminars at the beginning of their academic careers. These one-credit seminars are designed to encourage our students to explore new areas of interest as they develop their own intellectual focus. It is simply not possible for first-year students to appreciate the vast and varied academic opportunities available to them when they enter Rutgers. The Byrne Seminars provide a vital introduction, helping to define the contours of the sweeping scholarly landscape that lies ahead.

Students entering Rutgers during our 250th year are beginning their academic careers during perhaps the most exciting time in our University’s storied history. We have just completed an unprecedented integration with the former University of Medicine and Dentistry of New Jersey, creating Rutgers Biomedical and Health Sciences, which will offer a stunning new array of educational opportunities for our students. We are in the midst of the largest comprehensive capital construction phase in Rutgers’ history, and the buildings going up around all of our campuses will provide modern facilities for 21st-Century teaching and learning. And, of course, we just joined the Big Ten athletic conference and its academic counterpart, the Committee on Institutional Cooperation.

To help guide us during this transformative period, our University community worked together for nearly two years to articulate a vision for Rutgers’ future, which included creating a detailed strategic plan for Rutgers University–New Brunswick. Our institutional commitment to transforming the student experience provides the central axis for this plan, as we strive to ensure Rutgers is student-centered and relentlessly focused on student success. We are fortunate to be able to rely on proven programs like the Byrne Seminars as models for new initiatives to help us further enhance the student experience.

I strongly encourage all first-year students to browse the tremendous offerings from this catalogue and enroll in a Byrne Seminar. These seminars have helped thousands of students forge their academic path through Rutgers. Explore the fascinating topics from across the disciplines and see what a Byrne Seminar can offer you.

Richard L. Edwards
Chancellor, Rutgers University–New Brunswick

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Richard L. Edwards
Chancellor, Rutgers University–New Brunswick
DO OBESITY TREATMENTS WORK?
Nicholas Bello (Animal Science)
"Globesity" is the term used by some to describe the worldwide impact of obesity. Several treatments are available for obesity, but do any of them work? In this seminar, we will explore the causes and consequences of obesity and current treatment strategies. Through hands-on experiments, students will have the opportunity to review state-of-the-art research in paper-based electronics, and then exercise creativity in an engineering lab to build their own electronic systems that they will design while keeping in mind aesthetics and artful creativity.

01:090:101 section 54 index 11348

THE WONDER AND INTRICACY OF THE HUMAN MACHINE
Joseph Freeman (Biomedical Engineering)
The human body is an intricately engineered machine. To achieve peak operation, the body employs intricately designed molecules, arranged in specific tissues, in different areas of the body. The human body has an incredible level of organization from the molecular level to the tissue level; one small change at the micron level can lead to health issues or even death. In this course, we will take a journey into the human body beginning at the molecular level and ending at the tissue level. We will discuss how molecular structure leads function; leading to a discussion of tissue structure and how molecular arrangement and alignment dictate tissue behavior. In addition, we will have a hands-on experience isolating proteins from tissue and reconstituting them into a usable biomaterial.

01:090:101 section 21 index 08550

FROM THE SEA TO THE RARITAN: THE SPAWNING JOURNEYS OF OUR LOCAL ANADROMOUS FISHES
Olaf Jensen (Marine and Coastal Sciences)
Anadromous fishes are species which live much of their lives in the ocean but must return to fresh waters like the Raritan River to complete their life cycle. Their journey from the ocean to their freshwater spawning grounds has always been a perilous one, but human alterations to habitat—especially dams and pollution—have made it harder. Legislation, such as the Clean Water Act, and technology, such as fish ladders, have helped to reverse the declines of many species. In this course, we will focus on anadromous fish species in our back yard (the Raritan River). The spawning migrations of fish will serve as a jumping off point for a broader exploration of river ecology and restoration. Students will learn field ecology techniques through trips to the Raritan where they will participate in ongoing research on fish migrations.

01:090:101 section 23 index 18107

REVOLUTIONARY REMEDIATION: ENVIRONMENTAL REMEDIATION AT RUTGERS UNIVERSITY
Donna Fennell (Environmental Science)
New Jersey was the first industrialized state in the union and has suffered from substantial environmental contamination as a result of heavy production and usage of industrial chemicals. Fortunately, New Jersey is also where some of the earliest applications of waste treatment and environmental cleanup technologies have evolved. Indeed, some of the earliest scientific research on pollutant biodegradation was conducted by scientists at Rutgers—and Rutgers faculty continue to lead vibrant research programs to repair the environment. In this seminar, we will explore the history of environmental pollution and environmental remediation in New Jersey, specifically focusing on contaminated sites along the Raritan River. We will explore technology-enabled mapping that allows a birds-eye view of contaminated sites in New Jersey. Students in this course will continue an important Rutgers tradition by participating in laboratory research activities and developing ideas related to environmental cleanup in the Raritan River Basin.

11:090:101 section 03 index 14494

PAPER-BASED ELECTRONICS AND ART
Aaron Mazzeo (Mechanical and Aerospace Engineering)
Paper is an ideal medium for folding (origami), cutting, embossing, casting, inking, and painting. Combine these attributes with electronic components and you have an enormous project of library research, the various layers of which can be excavated and explored — on the basis of materials as close to hand as Philadelphia, PA. The core questions we will explore — indeed, research — are as follows: (1) where did Stoker derive his notion of Dracula as a key character in the novel, and in what ways does this character reflect an informed understanding of the historic "Vlad the Impaler" from the fifteenth century? (2) what was the influence of Balkan and Slavic folklore and mythology on Stoker’s conception of vampires and their attributes? (3) why did Stoker settle on Transylvania as the major “eastern” setting of the novel, and how accurate was his description of the region’s geography? (4) what motivated Stoker to craft Dracula as he did — what were his underlying objectives and intents? — and how does this influence the modern imagination? In pursuing this journey, we will take a field trip to the Rosenbach Museum in Philadelphia to explore a treasure trove of primary evidence that will help us to answer the questions posed above.

01:090:101 section 49 index 18115

RESEARCHING BRAM STOKER’S DRACULA
Stephen Reinert (History)
This course explores Bram Stoker’s creation of one of the great masterpieces of English literature, on the premise that his text represents an enormous project of library research, the various layers of which can be excavated and explored — on the basis of materials as close to hand as Philadelphia, PA. The core questions we will explore — indeed, research — are as follows: (1) where did Stoker derive his notion of Dracula as a key character in the novel, and in what ways does this character reflect an informed understanding of the historic "Vlad the Impaler" from the fifteenth century? (2) what was the influence of Balkan and Slavic folklore and mythology on Stoker’s conception of vampires and their attributes? (3) why did Stoker settle on Transylvania as the major “eastern” setting of the novel, and how accurate was his description of the region’s geography? (4) what motivated Stoker to craft Dracula as he did — what were his underlying objectives and intents? — and how does this influence the modern imagination? In pursuing this journey, we will take a field trip to the Rosenbach Museum in Philadelphia to explore a treasure trove of primary evidence that will help us to answer the questions posed above.

01:090:101 section 54 index 11348

THE PSYCHOLOGY OF REASONING
Clark Chinn (Education Psychology)
People may try to think rationally and make sound decisions, yet they often fall short. For example, people are sold on the latest diet fad even though evidence indicates the diet is unsafe. Businesses cling to traditional incentive plans even when evidence shows that those plans hinder creativity and innovation. When we make mistakes evaluating evidence, we may make decisions that harm our health, well-being, and happiness. In this seminar, we will examine research in psychology and education to learn practical techniques to evaluate evidence and improve our reasoning and decision-making ability. At the same time, we will apply what we learn to analyze the reasoning of middle school students who are also learning to improve their reasoning skills. Our work will culminate in one or more presentations at the annual Aresty Undergraduate Research Symposium. Through this seminar, you will learn about reasoning and how to study it.

01:090:101 section 11 index 10995

ARESTY-BYRNE SEMINARS

FIGHTING THE FAT: DO OBESITY TREATMENTS WORK?
Nicholas Bello (Animal Science)
"Globesity" is the term used by some to describe the worldwide impact of obesity. Several treatments are available for obesity, but do any of them work? In this seminar, we will explore the causes and consequences of obesity and current treatment strategies. Through hands-on experiments, we will analyze neural pathways that control food intake and body weight, and examine how obesity drugs work. We will explore obstacles to long-term treatment and efficacy standards of the FDA.

11:090:101 section 01 index 14492
The School of Arts and Sciences (SAS) Educational Opportunity Fund (EOF) Program provides students with quality academic support and positive learning experiences designed to help them fully in every aspect of the college experience. The Byrne Program is pleased to offer Byrne Seminars specifically designed for incoming SAS EOF students.

TRUTH OR FICTION?
Leslin Charles (Rutgers Libraries)

The information age has democratized the dissemination of and access to information. Social media provides a voice to all and can blur the lines of fact and fiction. Are all tweets worth the noise they generate? How can we filter through opinions and the news media to gain accurate knowledge? This course will explore the impact of the information age on our understanding of truth. Through lectures, guest speakers, videos, role play, and discussion, students will examine various channels of information and will be required to find accurate data using a wide range of information sources.

01:090:101 section 86 index 18170

This semester Byrne Seminars is partnering with the Politics and Possibilities Program here at Rutgers to raise students’ political awareness. This special seminar will include campus presentations to students by local, state, and federal policy makers, culminating in a field trip to our nation’s capital, Washington, D.C.

NELSON MANDELA, BARACK OBAMA, AND THE TRANSFORMATION OF RACE RELATIONS IN SOUTH AFRICA AND THE UNITED STATES
Edward Ramsamy (Africana Studies)

Two phenomena that were once viewed as impossible are now history. Nelson Mandela, having served 27 years in prison for protesting apartheid, steered South Africa through a relatively peaceful transition and became that country’s first democratically elected president in 1994. In November 2008, the United States experienced its own “Mandela moment” when Barack Obama was elected as the nation’s first black president. Both South Africa and the United States share a common history of legally mandated segregation. Racial exclusion and oppression were central to the national projects of both societies, as well as the creation of white identity therein. For example, given the entrenched nature of racial discrimination and segregation in South Africa, many believed that apartheid could only come to a violent end. And in the United States, the persistence of the color line led most to assume that a person of African ancestry could not assume the presidency during their lifetimes. Yet, despite these assumptions, the opposite has become a reality in both societies. The aim of the seminar is: to interrogate the socio-cultural, political, and economic factors that led the election of Nelson Mandela and Barack Obama, respectively; to examine the success and challenges faced by both leaders in overcoming the legacy of the color line in their respective societies; and to assess whether terms such as “post-apartheid” and “post-racial” are appropriate in describing present race relations in these two societies.

01:090:101 section 80 index 15620
The Honors College at Rutgers University-New Brunswick provides students from a range of undergraduate schools with an interdisciplinary, research-focused living-learning educational experience. In partnership with the Honors College, the Byrne First-Year Seminars program is pleased to offer seminars specifically designed for incoming Honors College scholars. These seminars are intended to introduce students to the kind of interdisciplinary study that is a cornerstone of the Honors College’s mission through small courses that build on faculty members’ research interests. In addition to these select Honors College designated seminars, Honors College scholars have the opportunity to enroll in any traditional Byrne Seminar to fulfill their first-year Byrne requirement.

**THE POETRY OF ASTRONOMY**

Andrew Baker (Physics and Astronomy) and Carolyn Williams (English)

Poetry inspired by the beauty of the night sky dates back more than two thousand years and is still written today. However, the progress of science means that the night sky increasingly offers knowledge as well as beauty and wonder, giving poets new subjects, concepts, and themes with which to work. This seminar will examine the poetry of astronomy — poems written on astronomical subjects, and in some cases by astronomers — from both literary and scientific perspectives, under the guidance of professors from the Departments of English and Physics and Astronomy. Each week will feature discussion of a set of astronomy-related poems with a common theme, building on an introduction to the modern understanding of relevant background material. As a capstone project, each student will conduct an interview with a research astronomer, whose subject matter will inform the student’s composition of a small set of original poems. The seminar will introduce students to the practice of research in both the humanities and the natural sciences and will have special appeal for those whose interests span both areas, although no familiarity with astronomy or writing poetry is required.

**CITIZEN SCIENCE IN THE DIGITAL AGE**

Charles Keeton (Physics and Astronomy)

The work we call science was once known as natural philosophy and practiced by all manner of educated citizens. While science became the domain of experts in the twentieth century, digital technology is creating new opportunities for interested individuals to contribute to forefront research. In this seminar, we will discuss the nature of scientific inquiry and the emerging role of “citizen science.” We will then join ongoing, global research projects in fields of your choice. Current opportunities literally range from A (astronomy) to Z (zebras).

**CLIMATE CHANGE AND WATER RESOURCES**

Jim Miller (Marine and Coastal Sciences)

What are the global geopolitical and policy implications of climate change? This seminar will introduce students to global climate change that is occurring in response to increasing levels of atmospheric greenhouse gases. After an introduction to the science of climate change, we will focus on potential future changes in water resources, both globally and in New Jersey, including the potential for increased floods and droughts, sea-level rise and coastal salt-water intrusion, and changes in groundwater reservoirs. Hands-on assignments will include learning about the sources of water in students’ hometowns, how the water is obtained and processed, and what local companies are doing to address climate change. This seminar may include a boat trip on the Raritan River and/or a field trip to a local water processing plant.

**LANGUAGE GAMES AND TALKING HEADS**

Karin Stromswold (Psychology) and Kristen Syrett (Linguistics)

Despite the diversity among the thousands of languages spoken in the world, there are striking similarities in the “tricks” that people and languages use. This seminar will explore what makes human language so special, the language games we play in communicating with each other, and what happens when communication goes wrong. Questions we will address include: What makes human language distinct from animal communication? How can brain damage and disorders affect language? Why can speakers get two very different interpretations out of the exact same string of words? Why do we end up singing song lyrics that are creative but absurd? Are speech errors really Freudian? And what kinds of strategies do we use when we wish to convey—or avoid conveying—information? We will also explore how technology relates to language—why even the smartest computer programs still mangle the simplest sentences, how technology has infiltrated the way we communicate, and how advances in technology allow us to investigate how children and adults acquire, process, and represent language.

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BRAHMS, CLARA AND ROBERT SCHUMANN: LOVE, INSPIRATION, AND MUSIC IN THE ROMANTIC ERA
Min Kwon (Music)
This seminar will begin by focusing on the famous relationship between the well-known nineteenth-century German composer, Robert Schumann, and his wife, composer and pianist, Clara Schumann. Into their busy and successful lives walked a young Johannes Brahms, whom Robert Schumann instantly anointed, “our next musical genius.” Brahms became a close friend to both Robert and Clara. Though much has been speculated about the relationship between Clara and Brahms, there is no question that Clara was inspirational as artistic muse both to Brahms, as well as to her increasingly mentally unstable husband, Robert, who eventually drowned himself in the Rhine River. It’s one of the most fascinating and yet tragic love triangles in the history of music. This seminar will trace the roots of their relationships through their letters, and of course, the great music that was written for and played by each of these three iconic musical figures, who continued to inspire each other even after Robert’s untimely death. Live music of the three composers will be performed as a weekly part of the class, and a class trip to Carnegie Hall will culminate the seminar.
01:090:101 section 38 index 14508

HOW VALUABLE ARE OUR VALUES?
Anne Ashbaugh (Philosophy)
This seminar will be an exploration of Friedrich Nietzsche’s autobiography, Ecce Homo: How one Becomes What One Is. The course is designed to uncover the very heart of this philosopher’s innovative critique of western values and the impact of that critique on our ability to creatively approach life. The fascinating short autobiography challenges the fundamental presuppositions of our culture and suggests new ways to create values. Together we will examine this text and uncover its power to transform our views and to open new perspectives.
01:090:101 section 02 index 17771

WHERE ARE WE? MENTAL MAPS AND HOW WE PERCEIVE SPACE
Tisha Bender (English Writing Program)
Which island do you think is bigger? Sumatra or Great Britain? The average person on our continent would say Great Britain because it’s a more familiar country to us. But Sumatra, in fact, is more than twice the size of Great Britain! In this seminar, we will look at how we create mental images of locations and the distances between them. We will start by discussing the images we have of familiar places, such as our bedroom or our hometown, and move to the less familiar—the college campus, New York City, and beyond. On the one hand, what factors create misinformation and confusion about certain spaces, and barriers to the flow of information and knowledge about these spaces? On the other hand, what makes us engage in certain places; and how accurately do we know them? We will look at the impact of transportation, the Internet, GPS, and prevailing socioeconomic conditions, and discuss how globalization and changing economic circumstances have significantly affected global perception.
01:090:101 section 07 index 10994

THE ROOTS AND ROUTES OF GLOBAL CITIES
Ulla Berg (Anthropology; Latino and Hispanic Caribbean Studies) Zaire Dinzey-Flores (Sociology; Latino and Hispanic Caribbean Studies)
Since the 1950s, more and more of the world’s population live in cities. According to the UN, the world’s urban population is expected to surpass six billion by 2045. Much of the expected urban growth will take place in countries of developing regions, particularly Africa, but also Asia and Latin America. Managing urban areas, including the population flows that contribute to the growth of these cities, has become one of the most important development challenges of the 21st century. This seminar explores the relationship between urban spaces and the mobilities that constitute them. We will read from a range of sources and screen major documentary films for each case we address.
01:090:101 section 08 index 09807
THE COINAGE OF ANCIENT ROME IN THE RUTGERS COLLECTIONS
T. Corey Brennan (Classics)
This seminar will offer an introduction to the coinage of ancient Rome, from its origins in the early 3rd century BCE to the 4th century CE. Students will develop research expertise through hands-on work in the Alexander Library with Rutgers’ Ernst Badian Collection of Roman Republican Coins (one of the best collections of its type in North America) and the University’s growing assemblage of Roman Imperial coins, and make a field visit to the world-class holdings of the American Numismatic Society in New York City. Participants will gain an understanding of general patterns of development in Roman money over a 700 year period, as well as contribute their own research on ancient coins that hold particular historic, economic or artistic interest, which will then be published on Rutgers’ web-based public numismatic portal.
01:090:101 section 12 index 06383

SEXUALITY AND MIGRATION
Carlos Demena (Women’s and Gender Studies)
In the contemporary world, it is often assumed that people migrate from one country to another in search of economic opportunities. While this is largely true, scholars have begun to study the role that sexuality plays in the migratory process. In this seminar, we will begin by examining established models for the study of migration and sexuality. Through discussion of case studies, we will press on these traditional models as we discover ways in which sexual identities, practices, and meanings shape migration and vice versa. Case studies will include the lives of Filipino gay men in New York City, the role of sexuality in shaping U.S. immigration policy, and the shifting meanings of sexual practices among Mexican immigrant men and women in the U.S.
01:090:101 section 90 index 18164

THE VAULT IN OUR FICTION: JOHN GREEN AND LITERATURE’S BIG QUESTIONS
Brad Evans (English)
John Green’s sixth novel, The Fault In Our Stars (2012), a young-adult bestseller, has garnered a large following on every continent. As one of John Green's fans, because a breakout success last summer after being turned into a major motion picture. Through the heartbreaking love story of teenage cancer patients, the novel makes a strong case for the exceptional vibrancy of the young adult literary genre. Today, the book is a financial hit as well. Is there no doubt that Green’s many fans take him six young adults very seriously, but can you read them seriously as literature? How do Green’s novels fare when approached as literary texts and read through the lens of contemporary literary theory? Conversely, how does the field of literary study look when viewed through the lens of Green’s formative works of contemporary young adult fiction? This seminar will take up these questions while reading The Fault In Our Stars alongside some other works of classic and contemporary fiction, including Jane Austen’s Pride and Prejudice (1813), and the sensational YouTube adaptation “The Lizzie Bennet Diaries”.
01:090:101 section 92 index 18162

YOGA: FINDING CALM IN CHAOS
John Evans (Dance)
This seminar will help you find your calm in your life while joining the ranks of busy college students. Through the study and practice of yoga, we will explore how to build a stronger mind-body connection. This course will assist you in learning how the practice of yoga can support a happy and healthy life. Through centering and breathing techniques, strengthening and stretching yoga postures, and simple meditations, students will begin to gain a better sense of well-being. We will investigate mindfulness trainings and yoga sequences throughout the ten-week seminar.
01:090:101 section AE index 18689

THE WORLD TRADE CENTER: THEN AND NOW
Angus Kress Gillespie (American Studies)
Today the Twin Towers of New York City’s World Trade Center stand only in our memory, an image that calls to mind sorrow and loss. But during the years it was home to so many, this skyline became synonymous with the skyline, the towers that would define Manhattan. This year marks the 10th anniversary of the attacks on the Twin Towers, and we will be examining how the time of events have shaped the world we live in today. We will look at popular culture, memoirs, political and public commentaries, and scholarship to understand the impact of this event on world history.
01:090:101 section 24 index 08551

ORIGIN OF RELIGION IN HUMAN HISTORY
Tao Jiang (Religion) and Emma Wasserman (Religion)
This seminar will examine the role various religions, such as Confucianism, Hinduism, Christianity, and Islam, have played in the origins of political order in civilizations around the world. We will use Francis Fukuyama’s recent book, The Origins of Political Order, to help us frame the discussion. This book critically examines the role religions have played in shaping the political cultures of ancient civilizations and their modern implications. We will study notions like tribalism, patrimonialism, bureaucracy, rule of law, and the relationship between church and state, contextualized in their historical background. This will help us to better appreciate the contingency and vulnerability of a variety of modern political norms.
01:090:101 section 75 index 18172

ART AND SOCIETY IN ANOTHER AGE OF CRISIS
John Kenfield (Art History)
The seventh and eighth centuries CE were an age of crisis for the Late Roman/Early Byzantine Empire, a period dominated by the rise of Islam and the threat it posed to Europe’s Christian heritage (both east and west). These political and religious events were accompanied by near financial collapse. As the Arab tide swept away most of its eastern and North African provinces, it is estimated that the revenues of the Roman state fell by 75% in the seventh century, and to demonstrate further what was interpreted as divine displeasure, these mass-made events were accompanied by catastrophic geophysical activity in the eastern Mediterranean. The parallels with our own time are striking. This course will examine through readings and discussion the ways in which the imperial government in Constantinople dealt with those problems, their reflection in the visual art of the period, and attempted solutions.
01:090:101 section 30 index 09808

THE BOOK: DIGITAL, ECONOMIC, AND AS ART
Megan Lotfa (Rutgers University Libraries)
What is a book? From banned books to decorative books, this course will explore the cultural history of the book and how the advent of new technologies has changed the way we think about books. In this course we will explore how the practice of yoga can support a happy and healthy life. Through centering and breathing techniques, strengthening and stretching yoga postures, and simple meditations, students will begin to gain a better sense of well-being. We will investigate mindfulness trainings and yoga sequences throughout the ten-week seminar.
01:090:101 section 95 index 18159

WHERE AND WHAT IS THE CARIBBEAN?
Yolanda Martinez-San Miguel (Latino and Hispanic Caribbean Studies)
Did you know that the Caribbean has Indian and Chinese communities that have shaped contemporary cultural identities in the region? How are border studies applicable to Caribbean migration? Why is the Caribbean considered an exotic tourist destination, yet it is still deemed as one of the most conservative regions in terms of gender roles and definitions of sexual identity? Taking advantage of Critical Caribbean Studies at Rutgers, this Byrne seminar will address these and other questions, using the interdisciplinary and cutting-edge research produced by Rutgers faculty, composed of cultural critics, historians, anthropologists, and geographers. Faculty visits, short film screenings, music and Caribbean food will be showcased as part of this seminar.
01:090:101 section 43 index 14581

THE “PROBLEM OF EVIL” IN PHILOSOPHY, LITERATURE, AND FILM
Trip McCrossin (Philosophy)
What do we mean when we say of someone that they have “the patience of Job”, when we complain that “bad things happen to good people, and good things to bad,” when we admit that we are somehow consoled by the assurance that “things always work out for the best?” What such sayings, complaints, and consolations share, among other things, is that they reflect together, arguably, the ongoing legacy of the problem known as “the problem of evil.” In this seminar, we will work together to understand a basic divide that has animated modern responses to the problem, as both a theological and secular one, and to trace the legacy of this divide in certain exemplary contributions to twentieth-century literature and film.
01:090:101 section 44 index 06400
and heritage. This seminar will include a field trip to New York City.

for a holistic experience to deeper comprehension of Asian cultural arts

foods associated with respective festivities. The food serves as a conduit

with the practice of dance, we will experience how to prepare traditional

as an emblem of cultural identity and an expression of social order. Along

designed for students who want to expand their understanding of dance

This course will investigate various dances, traditional arts and culture of

the Collections of New York City museums, including the Metropolitan

century. We will discuss these developments in front of originals in

forward to the twentieth century, however, and portraiture began to

focused on the social status of the represented person, in the following

Portraiture reflects how the concept of individuality has changed

transmute fear, isolation, and loneliness into creative expression and joy?

or is it merely an editorial strategy to sell inspirational books? Can the

“through the shadows of the valley of death” look like in our contemporary

by this allegorical quest for self-fulfillment and joy. We will ponder

seminar, we will discuss the currency of the spiritual principles addressed

main character into a deep personal transformation as he discovers

translated into 67 languages, becoming one of the best-selling books

Originally published in Portuguese in 1988, this novel has since been

Musics from different parts of the world circulate in multiple directions,
crossing many boundaries. Cultural blending is commonplace in the 21st

century, and the digital age makes musical globalization unstoppable.

Many obscure recordings or secluded performances are readily available,

the movement of musical cultures becomes ever more continuous, and

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Mental Health Treatment in Talk and Interaction
Beth Angell (School of Social Work) and
Galina Bolden (Communication)
Serious mental health disorders, such as schizophrenia and bipolar disorder, are frequently treated in community psychiatric settings, involving multidisciplinary teams composed of psychiatrists, psychologists, nurses, and social workers. This seminar will introduce students to the interdisciplinarity of mental health through the lens of talk and interaction, a key resource through which treatment relationships are created and maintained. We will analyze field audio-recordings of interactions between mental health professionals and clients and examine questions such as: What are the elements of a good treatment relationship? How are these relationships enacted through social interaction? How are treatment relationships used as resources to help clients gain the most from treatment? How are treatment decisions negotiated?

01:090:101 section 20 index 09805

Secrets and Secrecy in Revolutionary and Contemporary Eras
Jack Bratich (Journalism & Media Studies) and
Craig Scott (Communication)
In revolutionary and contemporary periods, we repeatedly find the presence of secrecy. That secrecy exists in our most trusted institutions and among the closest of friends; it is used to protect people and cultures from those who might otherwise bring them harm, but it is also employed by those who might carry out unspeakable acts without being held accountable. Secrets may generally be disliked by society, but they can also represent some of our most cherished possessions. This seminar will introduce students to some of the many manifestations of secrets and secrecy in our society. This will not only include public secrets and secret publics/societies, but also proprietary secrets and trade secrets, secret juries and secret police, secret Santas and secret admirers, and much more. There is little doubt that we live in an era where demands for transparency and openness come face to face with the need for secret agents and top secret classified actions. Only by helping students to better understand secrets and secrecy as important (as well as problematic) forms of communication, may we start to address the challenges that secrecy presents in our daily lives.

01:090:101 section 61 index 12282

The Hunger Frames
Peggy Policastro (Dining Services) and
Gretchen Chapman (Psychology)
Can the framing of a situation affect what you eat? What types of environments cue you to eat healthy foods, and what contextual cues lure you into overeating or indulging in junk food? This course explores recent research that shows how redesigning the dining environment can promote healthier eating. We will meet each week at a different dining setting on campus (e.g., dining commons, take-out line, food truck, Henry’s Diner) to discuss recent studies and observe our dining environments. Combining Chapman’s expertise on the psychology of decision making and Policastro’s expertise in behavioral nutrition, this course highlights new research on how principles from behavioral economics and social psychology can be harnessed to promote healthy eating behavior. Students must be on a meal plan and willing to use seven meal swipes for this course.

01:090:101 section 10 index 06382

Success in Schools: Why Being Smart Is Not Always Enough
Ryan Kotler (Psychology) and
Timothy Cleary (Psychology)
Have you ever wondered why some students struggle in school and what can be done to help these individuals? In this seminar, we provide examples of common barriers to successful learning in schools (learning disabilities, anxiety, lack of motivation, attention disorders), and describe approaches for identifying and solving these school-based problems. Through discussion and class activities, students will be introduced to the field of school psychology and the specific roles and responsibilities of professionals (school psychologists), whose primary job is to work with teachers, students, and children of all ages to help them learn and be successful. The content of the course will provide practical information that will help students not only learn about hot-topic themes in education, but also consider the substantial role that psychology can have in school settings.

01:090:101 section 13 index 06384

Mama Mia! Conceptions and Constructions of Motherhood
Laura Curran (School of Social Work) and
Judith McCoyd (School of Social Work)
Mama, Ma, Mommy, Mom...few words can evoke such myriad emotions ranging from affection to contempt. Mothers can drive us crazy, yet we can’t live (literally) without them. In this seminar we will examine how mothers are conceived, or how women physically, psychologically, and socially transform into mothers. Our class will also explore how motherhood is constructed, meaning how mothers view themselves and how they are viewed by society. We will consider how societal expectations of mothers and the experience of being a mother has changed dramatically over time and how mothers’ experiences vary according to larger social and economic circumstances. We will learn about moms who face difficult experiences such as postpartum depression, the birth of a medically fragile child, and even the death of a baby. Finally, our class will look at the challenges mothers face in the workplace and in financially supporting their families.

01:090:101 section 15 index 06385

1893 around the world: the woman’s library at the chicago world fair
Marija Dalbello (Library and Information Science)
This seminar focuses on the Chicago World Fair that celebrated the four hundredth anniversary of Christopher Columbus’s arrival in the New World. The fair had over 27 million visitors and prompted multiple factual and interpretive accounts, including a murder mystery. The world exposition was also a setting for the expression of female identity. The Woman’s Building, for example, was the site of the Woman’s Congress and one of several displays of books at the fair, including the international women’s writings, representing twenty-three countries. Students will participate in weekly discussions about the fair and the world in 1893, focusing in particular on the books that symbolized the “discovery” of women at the fair and celebrated the “discovery” of America. The course will run parallel to the production of an edited book and a digital humanities project.

01:090:101 section 89 index 18165

Climate Change and Energy Sustainability
Frank Felder (Economic, Energy, and Environmental Policy)
This seminar will introduce first-year students to the major issues surrounding climate change and energy sustainability. It will describe the various ways energy is produced and consumed, the environmental impacts of greenhouse gas emissions and other environmental problems, the intersection of energy and international security, and survey various policy responses at the state, federal and international levels. Interactive discussions and teamwork exercises will be used throughout and combined with two on-campus field trips. The field trips will be to the two Rutgers solar farms, where students will see the benefits of clean and green energy. Students will meet with Rutgers facility’s personnel who operate these facilities to learn about how these energy sources contribute to meeting the energy needs of Rutgers University as well as providing efficient and cleaner energy solutions. In addition, students will visit the Department of Marine and Coastal Sciences to learn about its efforts to assess off-shore wind resources in support of New Jersey’s efforts to develop wind-based generation of electricity.

01:090:101 section 93 index 18161

R.U. Happy?
Bravel Holcomb (Blissuton School of Planning and Public Policy)
What makes you happy? What makes other people happy? In this seminar, we will explore the idea of happiness from various perspectives, including ancient and modern philosophers, the new field of positive psychology, the geography and economics of happiness, and the use of well-being as a measure of success in public policy. We will explore expressions of happiness in art, music, literature and poetry, and consider how cultural and generational differences affect how happiness is expressed. A communal meal will round out our seminar experience.

01:090:101 section 29 index 07580

Sound Mind, Sound Body: The Last 50 Years of Intercollegiate Athletics
Carl Kirschner (Special Counsel, Integrative Academic Programs)
The world of intercollegiate athletics has changed dramatically from the days of regional competitions without media coverage to the present national stage with television and internet coverage. What were the factors underlying the change? What role have the universities played? What role has the National Collegiate Athletic Association (NCAA) played? This seminar will review the history of intercollegiate athletics with a special emphasis on the last ten years. Significant case studies of positive and negative behaviors by players, coaches, and universities and the reactions (sanctions) by the NCAA will be studied.

01:090:101 section 33 index 06388

Social Sciences
Melissa Gasparotto (Rutgers Libraries)
“Googleing” has become synonymous with searching, and those who google are often presented with thousands to millions of results. Yet research shows that people almost never go beyond the first page or two. Appearing on the first page of search engine results has become big business in the 21st century, yet users are often unaware that what they see when they search (and what they do not see) is influenced by factors like money. What makes some results appear higher in the ranking? How do companies stay on top of search engines’ trade secret algorithms to alter the way their websites are found? More importantly, what are searchers not seeing? This seminar explores the factors and stakeholders of web searching. Students will learn to be savvy finders and consumers of information, with a clearer sense of who is watching them while they search, and the motivations and practices of the companies that provide the supposedly free services on which we have become so dependent.

01:090:101 section 22 index 07560

The Secrets (and Big Business) of Search Engines
R.J. Pension
Bravel Holcomb (Blissuton School of Planning and Public Policy)
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01:090:101 section 33 index 06388
Let the Games Begin: The Socio-Economic Effects of Mega-Events in Sports

Michael Lahr (Planning and Public Policy)

Why do countries and cities compete so fiercely to host major sports competitions? Do they benefit substantially from such events from an economic perspective? Or are the events more a matter of cultural pride or something else? How do experts measure the extent of the economic benefits countries and cities realize? In this seminar, students will reflect on these questions as we examine recent sporting events as case studies, including the recent 2012 Summer Olympics in London, the 2013 FIFA World Cup, the Sochi 2014 Winter Olympics, as well as other major sports events.

01:090:101 section AD index 18151

Climate Change: Identifying Solutions through Supply Chain Archaeology

Kevin Lyons (Supply Chain Management and Marketing Science)

Supply chain management and archeology are two academic disciplines that rarely cross paths. Archaeology is the scientific study of past cultures and the way people lived based on the things they left behind or that rarely cross paths. Supply chain management involves the movement of man-made materials as they flow from their source to end-users (customers). In this course, we will explore and learn how to combine these two disciplines to research and discover opportunities to improve the movement of man-made materials as they flow from their source to end-users (customers). We will conduct in-class and virtual archaeological digs at waste and dumpsites globally to look for climate impacts while identifying new eco-product design solutions.

01:090:101 section 41 index 07581

A Woman for President of the United States?

Ruth Mandel (Political Science)

In 2016, for the first time, a woman may head a major political party’s ticket for the office of President of the United States. This historic breakthrough will intensify the interest in the national elections, with many people discussing gender whether or not they regard it as a legitimate or relevant campaign issue. Seminar topics will include: (1) a brief history of female presidential and vice presidential candidates, including Shirley Chisholm’s historic 1972 campaign and the candidacies of Geraldine Ferraro (1984) and Sarah Palin (2008); (2) public attitudes about electing a woman to the White House; (3) media coverage of female candidates; and (4) women’s changing political roles and status as candidates and voters over the last four decades. A focal point of the seminar will be the life and career of Hillary Rodham Clinton, the sole woman so far with a realistic chance to make the presidential breakthrough, the first woman to be taken seriously as a credible major party nominee. We will look back at Clinton’s 2008 presidential campaign and devote special attention to her 2016 candidacy. During the seminar, we will meet various people with expert knowledge about women and politics and several with experience in the political arena (campaign strategists and workers, party activists, women leaders, journalists, etc.). With luck, we will take one or more field trips to special events.

01:090:101 section 42 index 06399

The Meaning of Videogaming

Paul McLean (Sociology)

Playing video games is a way to have fun, hang out with friends, and spend your time. But how does videogaming both shape and reflect our culture and our way of living as a society? In this seminar, we will learn about the meaning of videogaming from a sociologist’s perspective, as an “idioculture.” Videogaming is fundamentally a social activity: in gameplay we learn to follow rules, but also how and when we are supposed to bend the rules. We learn about honor, cheating, and honorable forms of cheating. We make pretend claims to status, and we participate with the tools of the game—heroes, villains, music, competition—to develop a sense of ourselves. In this course we will study the nature of play, play video games, and critically observe other game players in order to understand this idioculture both theoretically and practically.

01:090:101 section 46 index 14580

The Ecosystem of Entrepreneurship and Innovation at Rutgers

Gary Minkoff (Management and Global Business) and Jeffrey Robinson (Management and Global Business)

In this seminar, student participants will be introduced to the entrepreneurs, inventors, supporters, and investors that make new businesses and new ventures happen in New Jersey. We will call this the local ecosystem of entrepreneurship and innovation and Rutgers is a central player in this process of new venture creation. We will learn about entrepreneurship from alumni, faculty, and guest speakers from around New Jersey. Participants will be able to develop and pitch their own ideas to a panel of entrepreneurial students and alumni.

01:090:101 section 98 index 18156

Why is It so Hard to “Just Say No?”—Topics in Addiction

Robert Pandina (Director, Center of Alcohol Studies) and Laura Fenster-Rothschild (Center of Alcohol Studies)

Team-taught by faculty affiliated with the Rutgers Center of Alcohol Studies (CAS), this seminar explores issues surrounding addictive behaviors, especially as they affect contemporary college students. Through discussion, we will develop a broad context for understanding both addiction and efforts to address this personal, social, and public health problem. The course highlights research in the addictions and the tools needed to search and evaluate both scientific and mass-market information, and includes a tour of the CAS research laboratories and library.

01:090:101 section 30 index 06387
ECO-CINEMA: NATURE AND ENVIRONMENT IN FILM
Alexander Pichugin (German and Information Science)
This seminar is open to any student interested in film studies, nature/culture relationship, environmentalism and environmental humanities. It will engage students with the connections between ecology and cinema. The seminar begins with an exploration of the theoretical principles of the ecological approach and the history of ecocriticism, including ecocriticism in film. The focus of the second (main) part of the seminar will be on the application of ecocritical thinking to the analysis of feature and documentary films related to nature and ecology. The feature films include James Cameron’s Avatar, the documentaries are David Attenborough’s Life Series, Al Gore’s Inconvenient Truth and Werner Herzog’s Grizzly Man. The goal of the course is to approach the filmic representation of the relationship between humans and our natural environment in meaningful and creative ways.
01:090:101 section 97 index 18157

FUNDRAISING FOR INTERNATIONAL CAUSES: EFFECTIVELY UTILIZING CROWD-SOURCING AND OTHER SOCIAL MEDIA FOR GLOBAL CAUSES
Ronald Quincy (School of Social Work)
In this seminar, we will examine the challenges that nonprofit organizations encounter to amass the assets and resources needed to manage their charitable and public services. Traditional and nontraditional fundraising methods will be discussed, along with marketing principles. You will learn the art and science of “talking” for money, inside tips on successful grantmanship; and how to write winning funding proposals. The seminar will focus on “how to land the big fish.” Readings and discussions will be drawn from newsletters, journals, writings of top fundraisers, and “best practices” scholarship in this field of study. Following the course, students will be able to write grant proposals, and enhance their techniques on how to “ask” for funding.
01:090:101 section 52 index 11294

AND THEY’RE OFF! GALLOPING TOWARD THE 2016 PRESIDENTIAL NOMINATION
David Redlawsk (Political Science)
It’s 2016, and that means another U.S. Presidential election. With Barack Obama completing his second (and final) term, the campaign to replace him started in earnest last year, as Democrats and Republicans lined up for the Iowa Caucuses and the start of the primary season. This class will chart him started in earnest last year, as Democrats and Republicans lined up for
Obama completing his second (and final) term, the campaign to replace him started in earnest last year, as Democrats and Republicans lined up for
01:090:101 section 55 index 18116

QUEER LITERATURE BEFORE GAY LIBERATION
Kyla Schuller (Women’s and Gender Studies)
What did queer lives look like before gay rights burst onto the scene in the late 1960s? How can we understand the different forms that same-sex and queer identities and relationships took before the advent of the modern categories of homosexual, heterosexual, gay, lesbian, and transgender over the course of the twentieth century? We will explore the queer past by turning to literature about same-sex and queer desires written in the nineteenth century and the first half of the twentieth. Students will explore queer cultural history, as well as learn just how queer the culture of the United States has long been.
01:090:101 section 56 index 12274

VISUALIZING DATA TO TELL A STORY
Anselm Spoerri (Communication)
Students will learn about the principles and techniques necessary to tell a story using data visualization tools. They will analyze examples of successful visual data stories and learn to create effective visualizations using tools such as Google Motion Charts and Tableau. Students will work in teams to collect and prepare a rich data set that can be visualized as an interactive and engaging data story.
01:090:101 section 99 index 18155

PETER DRUCKER ON BUSINESS, MARKETING, AND SOCIETY
Can Uslay (Supply Chain Management and Marketing Science)
Shen Yanlyurt (Supply Chain Management and Marketing Science)
Peter Drucker is widely recognized as the best business thinker of the 20th century. This seminar is based upon the original writings of Peter F. Drucker and augmented with recent research from the world’s leading management and marketing thinkers. It is designed to expose students to marketing’s power to transform business and community through Drucker’s insights. The seminar will utilize cases, videos, and lectures as appropriate.
01:090:101 section 67 index 18177

ADDICTION
Mark West (Psychology)
Do people become addicted to technology? Although some students have direct or indirect experience with substance abuse, all will have experienced the lure of the iPhone, TV, web surfing, texting or playing video games. This seminar will encourage students to describe the behaviors they observe in themselves or others. We will explore the cognitive processes involved in starting, repeating or perseverating in technology related behaviors. The goal will be to discuss whether these behaviors are similar to or different from DSM-V criteria for addictive behaviors such as substance use, binge eating disorder, or gambling. We will come to understand the scientific knowledge created by clinical and preclinical researchers on addictions, including the neural underpinnings of behavioral and cognitive processes of the drug user. Ultimately, students will learn to identify warning signs in themselves or others when succumbing to self-defeating behaviors related to technology.
01:090:101 section 69 index 12555

AMERICAN COLLEGE EXPERIENCES FOR INTERNATIONAL STUDENTS
Dake Zhang (Education Psychology)
In what ways is the college experience for international students the same as American students? In what ways is the college experience in the United States different from the experience if you studied in your home country? What do you expect from your college experience here and how do you look at the challenges that you will face? In this course, we will share our personal experiences and use statistic research results to recognize how culture, language, family and educational experiences prior to college can affect our college experience, as well as how our college experience may influence our academic achievement, social wellbeing, and long-term career development.
01:090:101 section 76 index 12914
01:090:101 section 85 index 16950
CAN EXERCISE CHANGE YOUR BRAIN?
Brandon Alderman (Exercise Science and Sports Studies)
Almost everyone knows that exercise is good for them, yet most people are inactive. A more effective approach to get people off the couch and moving might be to inform them of the mental and cognitive health benefits of exercise. In this seminar, we will explore the underlying neurobiological mechanisms that help to explain the beneficial effects of exercise on brain health, covering topics from depression to ADD to Alzheimer’s. We will also explore the paradoxical effect of physical inactivity despite scientific claims of a “feel better” phenomenon following exercise.
01:090:101 section 03 index 14447

GENES, DRUGS, AND MODELS: SOMETHING OLD, SOMETHING NEW, AND A SYSTEMS VIEW
Ioannis Androulakis (Biomedical Engineering)
The good news is that we live longer. The bad news is that we live longer! The longer we live, the sicker we may get with diseases, some of which never existed before. At the same time, life and physical sciences are getting much better at understanding how we (human) function, how/why we get sick, and how/why we can be treated. However, the more we learn, the more we realize there is so much we do not know. We begin to appreciate that getting sick is not as simple as one may have thought in the past and that many things, some of them somewhat vague, such as “stress,” have the ability to make us sick, or sicker. Researchers have argued that the only way we can move our understanding forward is if we start “stress,” have the ability to make us sick, or sicker. Researchers have argued that the only way we can move our understanding forward is if we start looking “at the forest” and not just “the tree.” In this seminar, students will be introduced to disciplines such as systems biology, systems medicine, and systems pharmacology, which argue that we have to consider events at the “human/host” level and look at a patient from a holistic point of view, and not only at the level of specific molecule or gene. What this requires is that we bring together biology, physiology, engineering, and computational sciences in ways that we still do not know, so that we can put together all the sometimes confusing information we obtain when we study diseases, patients, and drugs and look at the entire “SYSTEM.” We will draw from our research experience and interactions with physicians, pharmacologists and biomedical scientists and engineers, to provide an overview of what might be the “next” frontier in medicine.
01:090:101 section 01 index 17770

SPACE DEBRIS: WHAT CAN WE LEARN FROM GRAVITY?
Xiaoli Bai (Mechanical and Aerospace Engineering)
Since the launch of the first satellite (Sputnik 1) in 1957, humans have created a lot of objects in orbit around Earth. Currently, the US Air Force is tracking about 23,000 Earth objects; unfortunately, among them only 5% are operational spacecraft while the other 95% are non-operational space debris. The first part of this seminar will look at key scenes in the movie Gravity, where space debris almost kills Sandra Bullock’s character, and we will determine what parts of the movie are scientifically true and which parts are just fiction. In the second part of the seminar, we will explore where space debris comes from and the current US and international mitigation guidelines. We will conclude the seminar thinking through multiple approaches to address this problem.
01:090:101 section 04 index 06379

THE HUMAN MICROBIOME: HOW OUR FRIENDS THE MICROORGANISMS TAKE CARE OF OUR HEALTH AND WELLBEING
Tamar Barkay (Biochemistry and Microbiology)
One of the most exciting discoveries in the last few years is the enormous benefit of the microorganisms that live on and inside the human body, collectively called the “human microbiome,” to our health and wellbeing. Ten microbial cells live on and within us for each cell that makes up our body! New findings showing how the activities of these microorganisms affect our diet, immune system, obesity rates, cancer and heart health, and even mental condition, are published daily, often attracting the attention of major media outlets. This seminar will introduce students to the concepts and technologies of the “human microbiome” and will include a visit to a DNA sequencing facility. Class discussions will focus on current findings that connect human health to our interaction with our microbiome.
11:090:101 section 16 index 18100

LUNAR STRUCTURES
Haym Benaroya (Mechanical and Aerospace Engineering)
Lunar Structures presents an historic overview of structural concepts for the Moon. While the focus is structural engineering for the Moon, the ancillary but critical topics of human survival on the Moon, the economical foundations of a lunar settlement, how the lunar settlement fits into humanity’s expansion to Mars, and the larger Earth-Moon-Mars system, are all part of this great adventure, and will be touched upon. Students will come away from this class with the knowledge of how this exciting research area may evolve in the next few decades.
01:090:101 section 06 index 06380

BIOLOGY OF WOMEN
Joan Bennett (Plant Biology and Pathology; Associate Vice President for Promotion of Women in Science, Engineering, and Mathematics)
Women are the primary consumers of health care in the U.S. and many visits to health care facilities are with reference to aspects of women’s biology: premenstrual syndrome; contraception; pregnancy; childbirth; reproductive cancers (breast, ovarian and uterine); and menopause. This course will give a basic overview of women’s biology and will cover male and female reproductive anatomy, the menstrual cycle and menopause, birth control, pregnancy, labor and delivery, childbirth anesthesia, the puerperium, lactation, sex determination, and diseases of the reproductive system. The class is meant to be a non-technical introduction to obstetrics and gynecology.
11:090:101 section 02 index 14493

THE ORIGINS AND EVOLUTION OF LIFE: HOW DID WE GET FROM THERE TO HERE?
Gyan Bhanot (Molecular Biology and Biochemistry; Physics)
Life on Earth began more than two billion years ago. In this seminar, we will begin by discussing scientific theories about the origins of life. We will trace the evolution of life from two billion years ago to today, by trying to understand the mechanisms it had to invent and then evolve into the enormous diversity of life we see around us. Examples of some of these inventions are the genetic code, mechanisms of energy production, the complex cell, sex, motion, vision, hot blood, consciousness, and death. Our discussions will broadly follow the structure of the book, Life Ascending: The Ten Great Inventions of Evolution by Nick Lane.
01:090:101 section 17 index 08549

MEDICINAL PLANTS: FROM ETHNOBOTANY TO PHARMACOGNOSY
Mary Bridgeman (Pharmacy) and Lena Struve (Ecology, Evolution, and Natural Resources)
Plants have been utilized since ancient times in an attempt to cure diseases and relieve suffering. Pharmacognosy, a branch of medical science devoted to drug plant history, selection, identification, and study, remains an alive and flourishing area of research in our modern world. The objectives of this seminar are to introduce students to the roles of plant-based medicines throughout history; describe the use of plant-based and herbal medicine in present-day patient care, including safety and adverse effects; introduce the cultural, spiritual, and recreational use of herbal medicinal agents; describe the toxicity and adverse effects attributed to medicinal herbal plants; identify future areas of drug development; and debate current controversies surrounding herbal medicinal drug use.
11:090:101 section 24 index 18541

OYSTERS THEN AND NOW: REVOLUTIONARY SEAFOOD RESEARCH AT RUTGERS
David Bushel (Marine and Coastal Sciences) and Daphne Munroe (Marine and Coastal Sciences)
Ever wonder where the shellfish on your plate comes from? If you are eating oysters, clams or scallops, the likely answer is New Jersey. Rutgers shellfish scientists have played a major role in the development and sustainability of the farms and fisheries that produce these delicious seafoods. From discoveries of the best ways to culture and harvest shellfish, and studies of the diseases that affect the wild populations, to genetic innovations that grow a better oyster and help protect wild ecosystems — Rutgers has been at the forefront of academic innovation and shellfish food production for over 125 years. This seminar will focus on the shellfish resources and industry in New Jersey — its history and the role that Rutgers researchers have played in helping shape it. The costs and benefits of these foods will be discussed in terms of human health, production costs, and ecological interactions. Field trips to Rutgers research facilities will allow students to explore first-hand the shellfish industry in New Jersey and the research that continues today.
11:090:101 section 08 index 14496

THE TEN GREAT INVENTIONS OF EVOLUTION
by Nick Lane.
The Ten Great Inventions of Evolution

SCIENCEs

2016 SPRING SCIENCEs

FIRST-YEAR SEMINARS: SCIENCEs
BIG DATA: REVOLUTION AND REALITY
Javier Cabrera (Statistics) and Ryan Womack (Rutgers University Libraries)
Talk of Big Data is ubiquitous, but what does this mean in practice? This seminar explores the impact that large scale data collection and analytics are having in academia and business. Web data collection is transforming marketing and economic production. Massive genomic databases are transforming medical research. And text mining is transforming the study of humanities. Meanwhile, merged databases of administrative records increase the potential for both greater social understanding and reduced privacy. New technological tools and approaches are required to handle massive data arrays in physics and astronomy. In business, large databases collect information in real-time and are mined for instant decision-making, such as credit card fraud detection, requiring speed and accuracy. What unique challenges in statistical methodology and computing does Big Data bring? What are the tools of this new trade and what are the traps and tricks of Big Data analytics? What kinds of jobs and careers are being created in Big Data fields, and what skills and degrees do they require? Readings and class discussions will explore the implications of Big Data in each of these areas, and student presentations will allow each student to explore a topic of interest in more detail. Students will emerge with an appreciation for the realities and potential of Big Data to transform our collective future.
01:090:101 section 73 index 18175

STEM CELLS AND BIOENGINEERING
Li Cali (Biomedical Engineering)
Bioengineering and regenerative medicine seek to develop new therapies for patients with injuries and degenerative diseases. The source of cells for these therapies remains a hot topic of interest. The unlimited potential of stem cells has ignited the creativity and imagination of scientists across multiple disciplines. Future development of this technology depends on increased understanding and effective utilization of stem cells. This seminar will introduce students to the biological, biomedical, biomaterial, and bioengineering of this new discipline. Students will be introduced to the world of stem cells. We will discuss their definition, origin, and classification, as well as applications of these cells in regenerative medicine. Upon completion of this seminar, students will know the intellectual and conceptual vocabulary required to further pursue an interest in stem cell research and the regenerative medical profession.
01:090:101 section 16 index 18108

OBESITY TODAY: HEALTH, ENVIRONMENT, AND SOCIETY
Sara Campbell (Exercise Science and Sports Studies)
Obesity has become a significant health and societal issue reaching pandemic levels. Our environment appears to favor obesity and as such has been defined as “the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations.” To date most of the strategies aimed at obesity focus on prevention and treatment, specifically pharmacological and lifestyle interventions. We will focus on investigating and understanding the environments that promote high energy intake and sedentary behavior and their physiological consequences. Students will learn about making healthy eating choices and exercise plans.
01:090:101 section 09 index 06381

COLLAPSE OF CIVILIZATIONS
Kuang Yu Chen (Chemistry and Chemical Biology)
Throughout history, civilizations prospered and collapsed: Minonan, Mayan, Angkor, and Paganii all suddenly collapsed at their peak, either due to a natural disaster of biblical scale or man-made disasters. In this global, digital, and big-data era, we are facing challenges of unprecedented scale: climate change, water supply, healthcare, environmental sustainability, and waste management, to name a few. If not managed well, these problems can turn into disasters capable of destroying modern civilization. This seminar will focus first on the past, asking what lessons can be learned by studying the collapse of ancient civilizations and how we can steer clear of the same fate. We will then examine urgent global issues that could lead to a similar collapse, including climate change, groundwater contamination, GPS (Great Pacific Garbage Patch), deforestation, WEEE (Waste of Electronics and Electric Equipment), and chemical waste. We will look at examples from China, Australia, and Hispaniola to illustrate the perils of an environmental disaster and its impact on the survival of global civilization.
01:090:101 section 87 index 18168

THE ROLE OF PHARMACEUTICALS IN MODERN HEALTH CARE
John Calalzzi (Pharmacy)
What are pharmaceuticals and how do they benefit people individually and society as a whole? These and other questions are explored and answered in the context of the U.S. and global health care systems. In recognition of Rutgers’ 250th anniversary, the course will emphasize the major and historic role of the Pharmaceutical Industry in New Jersey’s technological and economic advancement. The course will also discuss ways to prepare for careers in the pharmaceutical industry and related healthcare fields. Controversial surrounding issues like the opioid epidemic will also be discussed.
01:090:101 section 14 index 07559

WARS OF THE FUTURE: CHEMICAL AND BIOLOGICAL WEAPONS
Donald Gerecke (Pharmacology and Toxicology)
In this seminar we will examine potential weapons of biowarfare— including biological, chemical, and nuclear weapons—from several perspectives. Topics include their mechanism of action, biological impact, detection and recognition, epidemiology, and treatment. Using risk assessment and critical thinking, we will evaluate the potential dangers and effectiveness of using these types of weapons. We will also investigate strategies for defense against attacks, and the bioethical challenges of anti-bioterror research.
01:090:101 section 23 index 06386

THE THEORY THAT WOULDN’T DIE
Edwin Green (Ecology, Evolution, and Natural Resources)
What is the difference between a guess and an inference? An inference is based on evidence and reasoning, and scientists use inference to develop theories. In this seminar, we will explore the life (and death?) of one particular theory: Bayes’ theorem of probability. We will trace the fascinating tale of how Bayes’ theorem has been declared dead several times by leading mathematical statisticians, only to keep popping up as inferences in other fields used it to solve real problems, like cracking the Enigma code in WWII and locating missing nuclear bombs during the Cold War.
11:090:101 section 05 index 11313

LEARNING TO CREATE BEAUTIFUL ARTWORK WITH POLYNOGRAPHY
Bahman Kalantari (Computer Science)
Through a unique software, called Polynography, you will be introduced to a fantastic, very powerful, and easy to use artistic visualization tool, where polynomials turn into 2D images that can be used to create artwork of diverse types, to invent games, and to discover many new concepts as well as creative and innovative ideas that can be applied to many subject areas. Students of Polynography courses have found its applications in many fields of study: art, math, computer science, dance, linguistics, psychology, physics, chemistry, architecture, cryptography, and more. Working with Polynography software is similar to learning to work with a sophisticated camera: one needs to learn the basics, of course, but the rest is up to the photographer. (See www.polynography.com or Polynography on Facebook for more information.)
01:090:101 section 35 index 18111

PROCESSED FOOD: IS IT A NECESSARY EVIL?
Mukund Karwe (Food Science)
In this seminar we will cover various aspects of food processing: how food is processed, why food is processed, and the positive and negative impacts of processing. Are we doing it right? What would the world be like without processed foods? Can we live without processed foods? Who benefits from them? And what are the new and innovative food processing technologies? Processed foods have been receiving a bad rap for some time and are considered to be a major contributor to the obesity crisis and other chronic diseases. This seminar will teach students to collect good information on the topic, learn to decipher between subjective and objective judgments, and to promote scientific and logical thinking. In addition, there will be several laboratory scale demonstrations of food processing operations.
01:090:101 section 18 index 18102

SPACE EXPLORATION IN THE 21ST CENTURY
Doyle Knight (Mechanical and Aerospace Engineering)
This seminar will explore the economic, political, and social impact of the extraordinary growth of space exploration in the 21st century. In the previous century, space exploration was dominated by the U.S. and Soviet Union. But the past decade has witnessed unprecedented growth in both government and private space ventures, and space exploration is now a prominent activity in many nations. Currently, nine countries plus Europe (European Space Agency) are engaged in space missions, and more than 50 countries presently operate earth satellites for telecommunications, weather, surveillance, and other purposes. Three examples illustrate the breadth of 21st century space exploration: a private US company (SpaceX) now transports essential supplies to the International Space Station; China has now landed an unmanned vehicle on the moon; and India recently launched an unmanned space probe to Mars.
01:090:101 section 34 index 06389

OF (CYBER-) TINMAR AND SCARECROW: ADVANCES IN BIOMEDICAL RESEARCH, FOCUSING ON DISEASES OF THE HEART AND THE BRAIN
Sunita Kramer (Associate Dean of Academic Affairs, Honors College)
The heart and the brain are the two most vital organs in the human body, but how much do we know about them? By studying the development of non-human organisms, such as fruit flies, fish, and mice, scientists have discovered that the genes controlling the pattern of the body are almost the same in all animals. For example, the genes that instruct fly embryos to form wings and human embryos to form arms and legs are nearly identical. Through lectures, class activities, discussions, and lab visits, we will focus on how the study of “model” organisms can transform our understanding of both the healthy human body and human diseases, particularly those that affect the heart and the brain. Classes will include guided visits to state of the art research facilities on Rutgers campus, including the Rutgers Cell and DNA Repository (RUCDR), the largest national repository of human blood samples from patients with neurological and neurodegenerative diseases, as well as confocal and electron microscope core imaging facilities at Robert Wood Johnson Medical School. In addition, students will visit the Mütter Museum in Philadelphia, PA where they will view exhibits designed to help the public understand the mysteries and beauty of the human body and to appreciate the history of diagnosis and treatment of disease, including the challenges that the human body has to face in navigating the 21st century.
01:090:101 section 25 index 14469
THE GAIA HYPOTHESIS, CLIMATE, AND ECOSYSTEMS
Benjamin Lintner (Environmental Science)

Introduced by scientist James Lovelock and microbiologist Lynn Margulis in the 1970s, the Gaia Hypothesis proposes that organisms modify their environment in such a way to produce conditions more conducive to their existence. The Gaia Hypothesis has evolved into various forms, some of which (“Earth as a single organism”) have inspired considerable controversy. On the other hand, the scientific community has come to accept some tenets of Gaia. In this seminar, we will consider Gaia through the lens of our current scientific understanding of interactions between ecosystems and climate. Our discussions will focus on two geographic regions, the Amazon rainforest of South America and the Sahara/Sahara transition zone in West Africa, highlighting the key factors behind observed and simulated coupled climate-ecosystem variability and change in the past and present as well as in projections for the future. We will also examine the colorful history of the Gaia Hypothesis and philosophical considerations about the nature of modern scientific thought, such as what constitutes “good science.”

11:090:101 section 19 index 18103

KITCHEN CHEMISTRY AND FOOD PHYSICS
Richard Ludescher (Dean of Academic Programs, SEBS; Food Science)

What’s really in that cheeseburger? Foods are complex and heterogeneous mixtures of bio-molecules (starch, fat, protein, vitamins, colors, flavors, etc.) that provide nutrition and, of course, are tasty to eat. The quality of foods is related to many factors: safety, physical properties (texture), chemical and physical effects of processing and cooking, stability, sensory appeal, and more. This course will investigate how fundamental chemical and physical effects of processing and cooking, stability, etc.) that provide nutrition and, of course, are tasty to eat. This course will provide a window into the world of food microbiology and food science. We will explore popular trends and myths related to food microbes. Discussions will center on topics including probiotics, double-dipping, food safety myths (the five-second rule), and how to avoid foodborne illness when traveling. Finally, we will address the issue of food additives/antimicrobials in the context of food safety.

11:090:101 section 20 index 18104

WATER RESOURCES ENGINEERING: A CLOSE-UP LOOK AT THE RARITAN RIVER
Monica Mazurek (Civil and Environmental Engineering)

Water resources have been essential infrastructure for societies settling along the eastern coast of the United States. In particular, the Raritan River and its watershed has been crucial for the growth of commerce and communities in Northern New Jersey since before the American Revolution. This course combines field trips along the Delaware-Raritan Canal to examine hydrologic and chemical properties of the Raritan River. We will view US Geological Survey monitoring sites along the Raritan, examine ongoing water quality/water quantity parameters, and visit a drinking water treatment plant. We will explore Raritan River water property data using Geospatial Information Software (GIS) to understand the hydrologic and chemical information needed to manage the Raritan River as an essential regional resource for the present and future.

11:090:101 section 07 index 12273

WHAT IS PLASTICS ENGINEERING— AND WHY SHOULD WE CARE?
Jennifer Lynch (Materials Science and Engineering) and Thomas Nosker (Materials Science and Engineering)

Americans have a love-hate affair with plastic. We often look down on plastic imitations of natural products, yet we use plastic every day—and there are more than 10,000 kinds of plastic! This seminar focuses on the importance of plastics recycling and engineering for creating structural materials. We will discuss the development of recycled plastic lumber—an advancement that resulted in structural plastic lumber—and its infrastructure applications. Advanced materials research at Rutgers has resulted in patented and licensed recycled plastic blends used in railroad ties, pilings, I-beams, bridge substructure, and decking. The seminar culminates in a field trip to a vehicular bridge in New Jersey composed of a recycled plastic lumber blend or to a plant where recycled plastic lumber is manufactured.

01:090:101 section 40 index 11017

FOOD MICROBES: WHAT AND WHERE ARE THEY?
Karl Matthews (Food Microbiology)

This course provides a window into the world of food microbiology and food science. We will explore popular trends and myths related to food microbes. Discussions will center on topics including probiotics, double-dipping, food safety myths (the five-second rule), and how to avoid foodborne illness when traveling. Finally, we will address the issue of food additives/antimicrobials in the context of food safety.

11:090:101 section 20 index 18104

EXPERIMENTAL PHYSIOLOGY
Gary Merrill (Cell Biology and Neuroscience)

How does the human body work? Physiology holds the answer. This seminar will focus on experimental approaches that have been used by physiologists to solve some of medicine’s pressing problems. Through a combination of lectures, laboratory exercises and discussion, you will understand the relevance of physiology to human medicine.

01:090:101 section 47 index 09809

SPINAL CORD INJURY AND STEM CELLS: PUSHING THE FRONTIERS, RAISING THE ETHICAL QUESTIONS
Patricia Morton, Martin Grunet, and Wise Young (Cell Biology and Neuroscience)

Rutgers is home to one of the leading centers for spinal cord injury research in the nation. Drawing on the expertise of our world-class research center, this seminar will introduce students to scientific, social, and political issues related to spinal cord injury and stem cell research. Leading experts will present lectures to address the challenges and state of spinal cord injury research, clinical trials and the China SCI Clinical Trial Network, the capabilities of stem cells, and the role of public advocates in scientific research and stem cell legislation in New Jersey. Special presentations by people who have spinal cord injuries will help students understand what it is like to live with a spinal cord injury.

01:090:101 section 27 index 06863

THE FUTURE IS SOLAR: HARMLESS SUNLIGHT TO MEET WORLDWIDE ENERGY DEMANDS
Robert Niederman (Molecular Biology and Biochemistry)

Within fifty years, the world’s primary energy source, usable fossil fuel, will be depleted. Where will our energy come from then? One answer lies in our ability to harness sunlight as a source of clean and renewable energy. In this seminar students will learn how an improved understanding of photosynthesis—especially in simple organisms such as photosynthetic bacteria—can help scientists harness solar energy for a variety of applications. From solar-driven microbial bio-refineries that produce molecular hydrogen as a fuel source, to the fabrication of bio-solar photovoltaic cells that can convert sunlight into electric current. Our readings and discussions will be based on current popular science literature.

01:090:101 section 28 index 18259
THE UNIVERSE: WHAT WE KNOW AND WHAT WE DON'T

Stephen Schnetzer (Physics and Astronomy)

This seminar explores what we have learned about the fundamental physics of elementary particles and cosmology over the past fifty years as well as the current mysteries and unknowns. Through our discussions, students will gain an idea of what fundamental physics research is and the pressing questions that we are currently striving to answer. The course is based on an article by Steven Weinberg from the New York Review of Books entitled: “Physics: What We Do and Don’t Know.” The seminar will be at a serious level, but the use of mathematics will be kept to a minimum. Students who have taken college-prep level mathematics in high school should be well prepared.

01:090:101 section 62 index 14575

FOOD FOR THE 21ST CENTURY: CAN WE FEED 11 BILLION PEOPLE?

Paul Tachtistov (Food Science)

Feeding the world’s growing population is not an easy task. It is estimated that there will be 11 billion people on the planet by 2050. Can we produce enough food for all people sustainably and can we afford it? With modern science and technology, the food industry has gained a whole new set of tools to improve certain properties of food and associated processes that are necessary for food production. However, food production should never come at the expense of human health. In this seminar, we will discuss principles of the food supply chain, the modern approaches to design food products, and the ways to create a sustainable food future.

We will also discuss applicability of new sustainable sources of food such as algae, insects and biologically derived polysaccharides as food supplements. During the course, students will have an opportunity to prepare some formulations using new food materials and technologies, such as edible films, 3D printing, and more.

11:090:101 section 12 index 12836

INSPIRATION, INVENTION, AND INVENTION

Kathryn Ulrich (Chemistry and Chemical Biology)

What does it mean to be creative? What makes an inventor and how do they transform inventive concepts into reality? How do innovative transformations, such as Van Gogh’s paintings and biodegradable cardiac stents, impact humanity? This seminar explores the concepts of invention and innovation through the lenses of art and science. From examining inventions of modern artists to evaluating innovations by modern scientists, this course will probe the links between inspiration, invention, and innovation. The course will include a trip to the Museum of Modern Art (NYC) and Edison’s lab (NJ). This course is appropriate for non-science and non-arts majors; the only requirements are curiosity and critical thinking.

01:090:101 section 65 index 18183

GEMS AND MINERAL COLLECTING

Jill Van Tongeren (Earth and Planetary Sciences)

Gems and minerals have had a special place in society from the dawn of civilization. This seminar will be conducted during three day-long adventures. During one trip we will visit the Gems and Minerals exhibit at the American Museum of Natural History in NYC, meet the Curator, and take a behind-the-scenes tour of the collections of the museum that are not typically on display for the public. In a second trip, we will visit the Gemological Institute of America in NYC and see how diamonds are inspected and graded for the jewelry industry. Our final trip will be to the Franklin Mine in New Jersey, where we will be able to tour the mine, prospect for gems, and hunt for minerals in a region known for its UV-fluorescent minerals.

01:090:101 section 68 index 14574

GREEN-FLUORESCENT PROTEIN—APPLICATIONS OF THIS AMAZING PROTEIN

William Ward (Biotechnology and Microbiology)

Green-fluorescent protein (GFP) is one of the most important reporter proteins in all of biology and biotechnology. Unlike the chromoproteins, hemoglobin, cytochrome C, and chlorophyll-containing plant proteins, GFP is the only chromoprotein that makes its own chromophore. In this seminar, we will discuss the importance of this feature for molecular biologists who can genetically label any colorless protein, or any cell, tissue, or organism with a single gene that codes for GFP. For example, labeling cancer cells with the GFP gene allows a scientist to follow metastasis wherever the cancer cells move. The label is genetically replicated, so all progeny cells are brilliantly fluorescent. You may have seen photographs of fluorescent plants, fish, pigs, or cats. More than just novelties, these fluorescent plants and animals produce offspring that are equally fluorescent. Join this seminar for an opportunity to work with an expert in the biotechnology of GFP.

11:090:101 section 13 index 12915

METABOLISM: FROM LAVOISIER TO METABOLOMICS

Malcolm Watford (Nutritional Sciences)

How often have you heard the statement “I am fat because I have a slow metabolism”? In this course we will study all aspects of metabolism from the first studies of Lavoisier in 1776, when he placed a guinea pig, named Gina, in a calorimeter, to the present day field of Metabolomics. We will consider how metabolism is changed in conditions such as obesity, diabetes, and cancer, and how understanding such changes may lead to innovative treatments. Each topic will begin with some historical details, but the main part of our discussions will focus on the potential of individualized medicine and nutrition to maintain a healthy metabolism.

Topics will include: Brown Fat, the fat that makes you thin; Leptin, the cue for obesity (that wasn’t); the Wtberg effect in Cancer cells; and treatment of diabetes by gene therapy to change metabolism. The answer to the opening question posed here? A slow metabolism is not the reason you are fat, the evidence for which will be discussed in class.

11:090:101 section 14 index 12942

LIFE ON MARS

Nathan Yee (Environmental Sciences; Earth and Planetary Sciences)

Are we alone in the universe? Where did life begin? Is there life on Mars? How do we detect life on another planet? These are some of the biggest questions in science today. Since August 2012, the Mars Science Laboratory rover Curiosity has been exploring the planet Mars and returning a wealth of new information about the Martian surface. Its mission is to determine the planet’s habitability and assess whether Mars ever had an environment able to support microbial life. Recent data from Curiosity suggest that an ancient Martian lake may have harbored microbes that eat rocks. In this seminar, we will examine the new data returned by Curiosity and critically analyze the evidence for life on Mars. We will discuss the methods for life detection and evaluate the claims of bacterial fossils in the Martian meteorite ALH84001. Finally, we will explore the planetary chemistry required to sustain life and debate whether or not microbes could have ever lived on Mars.

11:090:101 section 15 index 14497

ROBOTICS: THE PAST, THE PRESENT, THE FUTURE

Jingang Yi (Mechanical Aerospace Engineering)

Most people know that robots are automated machines that do our bidding, including cleaning our floors, building our cars, and traveling millions of miles to other planets to do our research on alien environments. In this seminar we will explore both the hardware aspects of a robot (including structure, function, components, and materials), and the software side of robotics (the brains behind a robot’s functions). Of course, no robotics course would be complete without the fun of building robots in the lab, so anticipate that too! In this interactive seminar, you will find out what is out there in the commercial world of robotics as well as what is being developed in the university.

01:090:101 section 72 index 18176

HARRY POTTER AND BEHAVIORAL GENETICS

Lei Yu (Genetics; Center of Alcohol Studies)

Our behavioral patterns are deeply rooted in genetics. Not only do they include patterns of physical behaviors, but also patterns of cognition and thought processes. We readily observe such patterns in everyday life, even though it is not easy to determine their genetic basis. In this seminar we will use examples of behavior patterns from the Harry Potter book series as a literary tool to introduce scientific approaches for studying behavioral genetics.

01:090:101 section 71 index 14155
ABOUT BYRNE SEMINARS

The First-Year Seminars at Rutgers-New Brunswick were launched in fall 2007, and the program was re-named the Byrne First-Year Seminars in fall 2008 to honor a generous donation by Mr. and Mrs. John J. Byrne. Mr. “Jack” Byrne graduated from Rutgers College in 1954. Byrne Seminars were created to realize the Byrne family vision of introducing students to research faculty in a small seminar setting at the outset of their academic journey.