WHAT ARE 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 when you select your other courses this summer or you can add a Byrne to your schedule online through WebReg during the first week of classes. This catalog also includes section and index numbers for each fall seminar below the course description. You may find the Online Schedule of Classes useful in determining which courses are open and will fit best 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: byneseminars@rutgers.edu / Call 848.932.6971
Or visit our website: www.byrne.rutgers.edu

FALL 2018
RU-1st Byrne Seminars
Aresty Byrne Seminars
Honors College Byrne Seminars
Byrne Seminars with Johnson & Johnson
Transfer Byrne Seminars
First Year: Humanities
First Year: Social Sciences
First Year: Sciences

SPRING 2019
Aresty Byrne Seminars
Honors College Byrne Seminars
Byrne Seminars with Johnson & Johnson
First Year: Humanities
First Year: Social Sciences
First Year: Sciences
What is a Byrne Seminar? For first-year students at Rutgers University–New Brunswick, a Byrne seminar provides a window into the vast array of academic disciplines available to you. Thanks to the generous support of the Byrne family, we are proud to house the Byrne Seminar program, which offers students a unique opportunity to work closely with a faculty member and potential mentor at the start of their time at Rutgers, to meet and develop close friendships with peers who have similar interests, and to delve into an intellectual area of interest that may be germane to future academic pursuits.

Leafing through the pages of this catalogue, you will see the breadth and scope of the Byrne course offerings. To mark the 100th graduation anniversary of Paul Robeson, a noted scholar, singer, actor, and human rights advocate, we have developed a special Byrne seminar, entitled “The Undiscovered Paul Robeson,” which will look at the life and legacy of one of Rutgers’ most famous alumni. Other new Byrne seminars this year include “Cognitive Science Goes to the Movies,” which highlights a selection of popular movies, from Blade Runner to Eternal Sunshine of the Spotless Mind, exploring such topics as memory, perception, and the philosophical conundrums of artificial intelligence; “Is There Life on Mars?,” which will examine the prospects of life in the Universe beyond our own planet; “Paperbotics and Art,” which engages students in a creative fusion of building paper-based robotics and in crafting works of art; and many others.

I encourage you to join the thousands of students who have enrolled in a Byrne and have been introduced to new fields of inquiry that have helped shape their academic experience at Rutgers. Take a Byrne Seminar and it will change your view on the world.

Deba Dutta
Chancellor, Rutgers University–New Brunswick
FROM THE VICE CHANCELLOR

Since 2007, the Byrne Seminars have allowed first-year students to explore unique research and academic areas, which piqued their interest in fields outside of their comfort zone or intended major. This year’s theme for the Byrne Seminars Program is Diversity of Methodologies / Methodologies of Diversity, suggesting both the boundless possibilities of academic inquiry, and new and innovative ways professors teach and students learn.

This year’s Byrne Seminars consider how different critical approaches transform a field of inquiry and research—whether qualitative or quantitative, cultural critique, scientific method, or other unique or comparative analyses. Each discipline has developed its own set of conventions, and has borrowed approaches from other fields to revisit a particular question or problem. Given Rutgers’ long-standing commitment to diversity—cultural, racial, ethnic, sexual, religious, economic, and others—a number of seminars will highlight how these forms of diversity function as methods that inform specific disciplines. How does looking at the same historical or political event from a different lens—whether racial or class-based or religious—change our interpretation of the event?

Students who took a Byrne Seminar during their first year reported that the opportunity to study with a tenured professor in a small seminar environment had a profound impact on their collegiate experience, often opening the door to research opportunities and providing direction in choosing a major. The Byrne experience allows students to form a community of friends with whom they continue to share both academic and co-curricular interests and activities as they navigate life at Rutgers and beyond.

I applaud the students who explore the diverse course offerings through Byrne Seminars. I would also like to thank the faculty across the university who go above and beyond—from offering research assistantships through the Aresty Research Center, to providing sage advice to students applying to graduate school or entering the workforce.

I encourage students to take advantage of the opportunity to participate in a Byrne Seminar and challenge the way they think and learn. The Seminars play an important role in welcoming students to the research culture of Rutgers and encouraging scholarly development.

Ben Sifuentes-Jáuregui
Vice Chancellor, Undergraduate Academic Affairs
FROM THE ASSISTANT VICE CHANCELLOR

Now in its 11th year, the Byrne Seminars program is pleased to offer more than 140 courses designed to give students the opportunity to work closely with our renowned research faculty in small class settings. Since the program’s inception, over 24,000 students have participated in the more than 1,600 seminars offered across a diverse array of research disciplines. In order to enhance access to the possibilities that the Byrne Seminars offer for our first-generation students, we have partnered with the RU-1st initiative. Through this partnership, we are proud to offer special seminars on topics such as visual arts, education policy, and quantum computing.

This year we will also be celebrating the 100th anniversary of Paul Robeson’s graduation from Rutgers. Robeson was one of Rutgers’ most distinguished alumni and represented the very fabric Rutgers is made of. To mark the occasion, a special Byrne seminar featuring guest lecturer Susan Robeson will examine Robeson’s life and legacy. There will also be a special opportunity to hear Susan Robeson at an event for all Byrne participants and members of the Rutgers Community.

I invite all first-year students to explore the rich diversity of academic inquiry conducted by the world-class faculty here at Rutgers by enrolling in a Byrne seminar.

James H. Whitney III, Ed.D.
Assistant Vice Chancellor, Undergraduate Academic Affairs and Byrne Seminars
Celebrating the 100th ANNIVERSARY of
PAUL ROBESON’S GRADUATION
From Rutgers University

“The Undiscovered Paul Robeson”
Celebrating the 100 Year Anniversary of
Paul Robeson’s Graduation from Rutgers

Susan Robeson (Executive Director, Paul Robeson Foundation)
Edward Ramsamy (Chair, Africana Studies)
James H. Whitney III (Assistant Vice Chancellor, Undergraduate Academic Affairs)

The life and legacy of the esteemed Rutgers alumnus Paul Robeson embodies the idea of “global citizenship.” A towering figure in the African American struggle for human dignity and democratic rights, he connected this struggle with those of other peoples around the world who were also fighting for political rights, cultural recognition and economic justice. For example, among many other social justice movements that he embraced, Paul Robeson pioneered the global solidarity movement against racial segregation and white supremacy in South Africa and supported and marched with various British union movements in the United Kingdom struggling for better working conditions. The seminar introduces students to the life and legacy of Paul Robeson, especially with respect to how he integrated “home” and “world” into his civil rights activism.

Guest lecturer Susan Robeson co-leads the seminar, incorporating unpublished materials from the Robeson family collections, including Robeson’s handwritten notes and spoken word recordings. Susan Robeson’s family experiences and extensive knowledge about the life and times of her grandfather bring a level of intimacy and storytelling to the seminar.

The seminar has a fourfold focus: (1) to explore Paul Robeson’s formative years as a student at Rutgers and the challenges he faced as the only Black student in his graduating class; (2) to examine some of his artistic achievements as an actor on the stage and screen, especially his role in promoting African-American folk songs on the concert stages of the world; (3) to study his efforts to connect anti-fascism, anti-racism, and anti-imperialism together; and (4) to examine his controversial associations with communist movements and the former Soviet Union.

This Byrne is a collaboration with Student Affairs-Living Learning Communities for students who reside on the Paul Robeson floor. This Byrne is open to all students.

01:090:101 section AC index 11049

Susan Robeson

Susan Robeson is an award-winning documentary producer, broadcast journalist, author, and longtime activist. She has produced extensively for major public television stations and network affiliates in New York and the Midwest. As executive producer of the PBS public station in Minneapolis/St. Paul, Robeson ran a documentary unit and managed a second channel which she transformed into a model for community empowerment and development. Robeson has worked extensively with street gangs around the nation documenting efforts to organize peace treaties, and spent time in post-apartheid South Africa training township activists in broadcast quality video production. She also designed a nationwide citizen journalism initiative for the President of Timor-Leste and Nobel Peace laureate Dr. Ramos-Horta, to help foster civic engagement and build democracy in this first new nation of the 21st century. Early in her career, Robeson co-founded Third World Newsreel, an independent film production and distribution collective and for many years produced LIKE IT IS with Gil Noble on WABC-TV. Robeson’s work has screened at MoMA, Lincoln Center, Brooklyn Museum, numerous film festivals and Channel Four/UK.

Robeson has been a visiting professor in film, American studies and African-American studies at Macalester College, Carleton College, and Colorado College and is an adjunct communications professor at William Paterson University. She is the author of the award-winning book, The Whole World In His Hands: A Pictorial Biography of Paul Robeson, and a forthcoming children’s book, Grandpa Stops A War (Seven Stories Press). Robeson is currently producing her first dramatic feature film and is Executive Director of the Paul Robeson Foundation.
RU-1ST Byrne Seminars

RU-1st provides a series of initiatives that includes high-impact programming and identifying school-based resources for first-generation, and/or underrepresented students that eases the transition to college, and ultimately assists with student retention and graduation. RU-1st will continue to expand on the successful outcome based models of units within Student Access & Educational Equity and increase the Rutgers community dialogue on issues of equity, diversity, and access.

As part of the RU-1st initiatives, we are offering Byrne Seminars aimed at increasing awareness of critical and wide-ranging local, state, national and other important issues confronting higher education. The following page contains select seminars that are specifically designed with first-generation students in mind. These seminars will highlight the dialogue on issues of access and equality that we aim to foster through RU-1st initiatives.

Launching Your Successful STEM Career
Andrew Baker (Physics and Astronomy)
Charles Keeton (Faculty Director, Aresty Research Center; Physics and Astronomy)

Science, Technology, Engineering, and Mathematics (STEM) fields offer exciting opportunities for careers of discovery, innovation, and helping others. But how does one prepare for and achieve such a career? In this seminar, students will learn about the critical role played by research in STEM fields, the skills and qualities that are valuable in research (e.g., programming, teamwork, communication, and persistence in the face of obstacles), and the practical steps they can take at Rutgers to foster success in STEM majors and careers. Students will interact with guest researchers from multiple STEM fields, explore the life stories of STEM professionals like 2015 Presidential Medal of Freedom winner Katherine Johnson and 2016 Rutgers honorary degree recipient Jocelyn Bell Burnell, and receive training in basic programming in the Python language. As a final project, students will work in teams to reproduce some of the calculations made by Johnson and others to help launch NASA rockets as part of the Mercury, Gemini, and Apollo programs.

Quantum Computing: Qubits, Entanglement, Cryptography, Black Holes and Firewalls
Stephen Schnetzer (Physics and Astronomy)

This seminar will introduce students to the ideas behind the coming quantum computing revolution. We will discuss foundations of quantum information including qubits, entanglement and modern interpretations of quantum mechanics; applications of quantum computing in cryptography and other areas; the technologies being explored for realizing quantum computing; and the quantum information aspects of black holes and gravity. In the seminar, we will discuss technical subjects but at the level of a Scientific American article. Students need only have some understanding of physics and math at the high school level.

ARESTY-BYRNE Seminars

Traditional Byrne Seminars are designed to introduce incoming students to Rutgers faculty and to the exciting research being conducted at one of the nation’s top research institutions. The Aresty Research Center builds on this introduction by placing undergraduates with faculty mentors. With the Aresty-Byrne Seminars, these two signature educational initiatives in the Office of Undergraduate Academic Affairs are collaborating to meet the increasing student demand for research-based learning opportunities. Aresty-Byrne Seminars take traditional Byrne Seminars one step further and ask students to participate in their professors’ research through the practical application of knowledge. In other words, these seminars expose students to the activities of research—from building robotics to collecting specimens in the field to working through an archive. Professors leading these courses then offer an Aresty research project for the next year, and select students from the seminar as research assistants.

High-Tech Sustainability: Food for Thought
A.J. Both (Environmental Science)

We all need (and love) to eat. But do you ever stop and think: how is your food produced and where does it come from? How can we maintain a safe and year-round supply? In this seminar, we will look at ways in which we can use technology to create more sustainable systems of agriculture. In particular, we will investigate the challenges and opportunities associated with greenhouse production. Students will be exposed to greenhouse crop production, review and discuss the necessary inputs required for greenhouse production, complete a writing assignment and make their own presentation discussing a topic related to greenhouse production.

11:090:101 section 01 index 06255
Diversity of Methodologies to Study Huntington Disease Pathogenesis

Samuel Gunderson (Molecular Biology and Biochemistry)
Alice Liu (Cell Biology and Neuroscience)

Huntington's Disease (HD) is a hereditary neurodegenerative disease controlled by a single mutant gene called the mutant Huntingtin's (mHtt) gene that is transmitted in an autosomal-dominant mode. The mutation that causes HD is the expansion of a DNA sequence (CAG) repeats within the 1st exon of the Htt gene which codes for an extended stretch of glutamine residue (Q) in the mHtt protein. The pathogenic mechanism of mHtt is not clear. The aim of this seminar is to learn the basics of biological information flow. Within this context, we will learn and discuss the cause and role of mHtt protein aggregation and pathogenic transcript processing that result in cellular dysfunction.

01:090:101 section AB index 11048

Attention Deficit Hyperactivity Disorder: Recognizing Symptoms in Film and Exploring Individual Perspectives

Judith Harrison (Educational Psychology)

Have you ever noticed that some people, maybe you, struggle to pay attention and avoid distractions? Do you ever wonder what it is like to have attention deficit hyperactivity disorder (ADHD) and what can be done to help? This seminar will explore the origin and characteristics of ADHD from a personal perspective through a book study, learn to recognize ADHD in film, and discuss ADHD research being conducted by the professor. Students will learn interventions to teach skills needed to address the symptoms as revealed in the course activities. The seminar will include a field trip to explore ADHD in the community. Activities across the course will result in group projects that map the symptoms and impairment associated with ADHD across readings, film, and community organizations.

01:090:101 section 42 index 09000

Handmade Sound: Making Sound Art and Music with Electronics

Steven Kemper (Music)

Since the late 19th century, musical pioneers have been harnessing the power of electricity to create new and exciting sonic results. In this seminar, students will learn about electronic and computer music by building and hacking their own electronic musical instruments. Assuming no previous experience, students will develop technical skills in acoustics, circuit design, human-computer interaction, microphones, programming, recording, and synthesis. Students will also learn musical fundamentals, both as performers and composers in the ensemble of handmade instruments. The semester will culminate with a public performance of original music.

01:090:101 section 66 index 09916

Selfies and Digital Culture

Mary Chayko (Communication)

"Selfies," or photographs that an individual (or a group) takes of themselves that can be privately held, transferred to others, or displayed via social networks, are becoming a popular and culturally significant way that knowledge is produced and shared in modern digital cultures. In this seminar, we focus on three questions drawn from the instructor's research and that of others who study selfies and digital culture: How do selfies "speak" as cultural objects, and how do they compare to other forms of communication and art? How are power differentials expressed and experienced as selfies are taken, shared, and given meaning in a digital culture? The seminar includes two visits to the Zimmerli Art Museum.

01:090:101 section 09 index 05794
For more than 120 years, Rutgers, The State University of New Jersey, and Johnson & Johnson have partnered to advance academic, research, and community service endeavors. Building on this long-established relationship and legacy of leadership, these special co-taught seminars by Rutgers faculty and Johnson & Johnson professionals will enhance the learning experience of students from multidisciplinary areas of study. This initiative expands research ties, while introducing first-year students to an array of career and educational opportunities. Students will explore areas of common interest to both Rutgers and Johnson & Johnson, including global public health, health and wellness, ethics, community and leadership.

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The Journey from Lab to Launch: New Product Planning
Chan Choi (Marketing)
Can Uslay (Marketing)
Denise Story (Field Sales Trainer, Johnson & Johnson)
Kevin Williams (Senior Marketing Manager, Johnson & Johnson)
Successful commercialization of new products is crucial to address unmet needs of society, and increase sales, profits, and even survival rates for firms in increasingly competitive industries. The focus of this seminar is the new product development and planning process from the lab to launch. Best industry practices, development team dynamics, sales forecasting, pricing, sales team training, and real-world team projects are cornerstones of the seminar. Students who take this seminar should be committed to participating fully in a team project that they will present during the last week of class.

01:090:101 section 91 index 17166

The Art and Science of Positive Leadership
Sharon Lydon (Rutgers Business School)
Nancy Mark (Director, Health Care Compliance and Privacy, Johnson & Johnson)
Throughout history, and certainly during the history of the United States and Rutgers University, progress has been synonymous with leadership. The revolutionary understanding of leadership is that it is everywhere and in everyone’s capacity. While some may be born with a number of the attributes needed for outstanding leadership, it is well accepted that leadership is something that can be learned and that can be studied. This seminar explores qualitative and quantitative research “on leadership,” and reviews research and theory toward the goal of empowering students to be leaders in all aspects of life, including college, career, and community. Topics include leadership in academic, corporate, and nonprofit work environments, as well as leadership styles and competencies. Relevant issues related to women and ethnic minorities will also be discussed. The course includes readings, dynamic discussion, debate, role-play scenarios, and real-world visibility and exposure to leadership with distinguished course co-instructors, and guest speakers from academic, health care sector, and corporate leadership contexts.

01:090:101 section 24 index 05803

Global Environmental Health
Mark Robson (Plant Biology)
There are almost eight billion people in the world today and the population will grow to close to ten billion by 2050. Almost eighty five percent of the population live in developing countries. One of the challenges for this ever-growing population is providing a secure food supply. We will discuss the trends in global food production and the technology used to increase global food supply. We will also explore the ever-growing global obesity epidemic. While there are 900 million under nourished people in the world there is a larger number of people, close to 14 billion, who are overweight. Finally, we will look at the overall health of the global population, their jobs, their lifestyle, and the relationship to global environmental health issues, in particular those dealing with problems such as water and air pollution, food production and safety, and infectious and occupational diseases. Professor Robson will share experiences from developing countries in Southeast Asia and West Africa. Case studies and current research will be used as illustrations.

11:090:101 section 16 index 17168

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 65 index 11046
The seminar addresses the representation of walking in Western cultures.

**Mussolini’s Rome: Italian Fascism and the Politics of Knowledge**
*T. Corey Brennan (Classics)*

This seminar examines Fascist appropriation and misappropriation of Roman history, art, literature, architecture, and archaeology, especially in the city of Rome, but throughout the Italian peninsula and the short-lived Italian empire, with the focus on the years 1922-1943. The focus is especially on Mussolini’s casting about in the past to shape his public image, first as Julius Caesar but eventually as the 20th century’s answer to Augustus, the founder of the Roman empire. The Fascist regime’s dual emphasis on restoring ancient monuments and building new monumental complexes will receive close attention. The class will utilize an array of sources to understand the main developments in the era, including small media and ephemera (postage stamps, coins, medallions, postcards, school notebooks); contemporary newsreel footage (culled from the ca. 4,000 hours newly available on the Cinetettà Luca website); and unpublished material from a newly -discovered archival collection in Rome. No knowledge of Italian is required.

**01:090:101 section 03 index 13998**

**Korean Hip-Hop: A New Poetic Intervention**
*Young-mee Yu Cho (Asian Languages and Cultures)*

We will explore how Korean musicians have been able to build a creative space to experiment with this new American import since 1990s and to find ways to subvert censorship and finally to give birth to Korean Hip-Hop. After two decades of negotiating linguistic and cultural tensions, successful rappers have seamlessly created internal and multi-word rhymes, flow and storytelling that flaunt an identity of “self-conscious” artists in the world of musical self-outs.

**01:090:101 section 29 index 09989**

**The Books That Make Us**
*Marija Dalbello (Library and Information Science)*

In this seminar, we will examine the life-stories of select monuments of writing, such as Sumerian clay tablets, the original (Hokusai) manga, the Gutenberg Bible (the first major book printed with the printing press), and Carl Jung’s notebooks. We will consider their material life, the technologies necessary to produce them, and the meanings that they had for their contemporaries. How did people make those seminal works, and why? How do such important works help us make sense of our world? In what sense do these works represent revolutionary text technologies and how have they revolutionized the world of ideas? We will also think about writing itself as a technology that encompasses letters, drawings, graffiti, and illustrations; and learn how texts can be hand-written, painted, or inscribed, as well as mechanically and digitally produced. We will explore a wider context for circulation of books, texts, and reading. In order to view, handle, and examine actual specimens, we will visit a rare books library in the area or New York City, and use the collections of the Zimmerli Art Museum at Rutgers.

**01:090:101 section 20 index 05800**

**Yoga: Finding Calm in Chaos**
*John Evans (Dance)*

This seminar will help you focus on finding 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 07 index 16848**

**Sacred Number: How Science and Art Create the Magic of Numbers**
*Jeff Friedman (Dance)*

It is amazing how many numbers show up in our daily lives. Where does “number” come from and why is it so embedded in nearly everything we deal? We approach the concept of numbers in different ways, from science, the humanities, art and architecture. In this seminar, we will look historically at why numbers are sacred in different cultures; why numbers are “lucky” and “unlucky”, and how systems of measurement like the “cubit” and the “megathetic yard” are based on body parts. You don’t have to love math to take this course; you do need to be curious about how we developed unusual literary, tactile, and philosophical ways to create and develop something so basic and fundamental to our lives as “Number.”

**01:090:101 section 70 index 20546**
Sounding Play: Acoustic Ecology of Sports and Games
Eduardo Herrera (Music)
The intimate silence of the tennis court interrupted by a player’s grunt; the focused listening of a double Dutch jumper with ropes that move too fast to see; the country music song playing in the pickup truck you stole in a video game; chanting with 40,000 other fans against the wrong call the referee’s whistle just signaled. Sound is an essential component of sports and games. Both as players and spectators, people engage in listening, chanting, speaking, noise-making, music-making, and even staying silent as part of an auditory ecology that is intimately tied with the immersion, flow, and ultimately, the success of the activity. In this seminar we will explore a series of case studies within the game-sport continuum that address important questions about gender, race, social experience, and the nature and potentials of participatory sound making. These will include chanting and crowd noise in stadium sports (soccer, football, tennis), double Dutch rope skipping, diegetic and non-diegetic music in open-world action games (Grand Theft Auto, Lord of the Rings Online), sound-driven designer board games (Space Alert, Escape: The Curse of the Temple), the sound crisis of motorsports (Formula 1 and Formula e), and music-rhythm games (Guitar Hero, Rock Band, and Dance Dance Revolution). Sound, ever present, becomes the basis for deep, intimate connections among and across players, gamers, and audiences.
01:090:101 section 26 index 17179
Play to Learn in Higher Education
Megan Lotts (Rutgers Libraries)
Play can create a dynamic narrative that promotes engagement and community, as well as fosters creativity and problem-solving which are crucial to innovation. Play also builds strong communication and social skills, and these skills can be helpful when creating knowledge, performing scholarly research, or engaging with one’s peers. Play can mean anything and is crucial to innovation. Play also builds strong communication and social community, as well as fosters creativity and problem-solving which are important questions about gender, race, social experience, and the nature and potentials of participatory sound making. These will include chanting and crowd noise in stadium sports (soccer, football, tennis), double Dutch rope skipping, diegetic and non-diegetic music in open-world action games (Grand Theft Auto, Lord of the Rings Online), sound-driven designer board games (Space Alert, Escape: The Curse of the Temple), the sound crisis of motorsports (Formula 1 and Formula e), and music-rhythm games (Guitar Hero, Rock Band, and Dance Dance Revolution). Sound, ever present, becomes the basis for deep, intimate connections among and across players, gamers, and audiences.
01:090:101 section 26 index 17179

Looking East: A Different Way of Learning Dance, Language, Traditional Arts and Cultures Through Movement
Paul Ocampo (Dance)
Chien-Ying Wang (Dance)
This seminar will investigate various dances, traditional arts and culture of Taiwan, the Philippines, and neighboring countries. Through the language of dance, students will learn traditional arts and cultures using practices and modalities that are fun, interactive and informative. This seminar is designed for students who want to expand their understanding of dance as an emblem of cultural identity and as an expression of social order. Along with the practice of dance, we will experience how to prepare traditional foods associated with respective festivities. The food serves as a conduit for a holistic experience to deeper comprehension of Asian cultural arts and heritage. This seminar will include a field trip to New York City.
01:090:101 section 79 index 09268
From the Bronx to the Supreme Court: My Beloved World, A Memoir by Justice Sonia Sotomayor
Damaris Otero-Torres (Spanish and Portuguese)
In My Beloved World (2013), Justice Sonia Sotomayor offers a candid reflection of her experiences as the daughter of Puerto Rican immigrants in the South Bronx. In studying the game of the memoir, this seminar provides a critical and literary platform for discussing the convergence of the personal and the political. What are the most compelling events of Justice Sotomayor’s life? Do these experiences matter for a deeper and fuller understanding of the law in the highest court of the United States? This seminar will closely examine how Justice Sotomayor’s narrative leads her readers into the complex landscape of gender and social inequality, academic privilege, minority cultures, cultural identity, corporate politics, political activism, affirmative action, civil rights, language, literacy, and poverty, among others.
01:090:101 section 54 index 05812
Listening to Divinity, from Antiquity to Twenty-First-Century America
Timothy Power (Classics)
The seminar considers the auditory experience of the divine—how humans hear their gods—across a range of historical epochs and religious cultures. We begin in Ancient Greece, Rome, and India. Then, after looking back to the sonic revelations of divinity in the Hebrew Bible and in the New Testament, we examine the role of divine sound in the Christian tradition of the Catholic/Media Age, the American/Protestant Great Awakenings, and Mormonism. We also look at “cuits” in the contemporary US, in particular the phenomenon of “channeling.” We conclude with the “soulingness” of indigenous Australian, and consider the place of sacred sound in the Aboriginal vision of world creation by the gods.
01:090:101 section 67 index 09043

Cultural Fusion in Music of the Twentieth and Twenty-First Centuries
Nancy Rao (Music)
Music 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 music around the globe are in close contact with one another. The seminar will consider various forms of absorption, translations, and articulations in music culture that emerged as result. And as various cosmopolitanisms are central in shaping cultural fusion, we will explore their characteristics and relation to music making. Field trip to concerts and other music performances in New York City and New Brunswick.
01:090:101 section 47 index 05809
Dance Improvisation: Learning Tools for Choreography and Performance
Julia Ritter (Dance)
This seminar will provide students with an introductory experience of dance improvisation as a skill for developing choreography and performance. Students will explore a range of physical exercises yet no previous training in dance nor special attire is required—sweatpants and t-shirts are acceptable. Students will learn how to develop multidisciplinary approaches to dance improvisation that can be deployed when creating choreography for the stage, when organizing flash mobs, and/or devising other performance events. Building upon body, space, time, energy, and relationship as the core conceptual elements of dance, students learn strategies for generating movement vocabularies from a variety of inspirational sources including sound visual, artistic, and architectural design, among others. The seminar includes a field trip to a performance in New York City.
01:090:101 section 71 index 09044
Rockin’ Roots, Global Reach: Telling the Story of Jersey’s Popular Music
Jonathan Sauceda (Rutgers Libraries)
Frank Sinatra, Whitney Houston, and Bruce Springsteen are just a few of the artists who have called Jersey home, but for centuries this state has been fertile ground for musical creativity. In this seminar we will work with Rutgers’ incredible, rare, and unique New Jersey sheet music collection, making the materials freely accessible and comprehensible around the globe. Students will learn about the popular music culture in the 1800s and early 1900s, as well as the meaning of and ideas behind open access. Each student will choose a piece of sheet music, digitize it, and create a finding aid that includes an explanatory essay, which will place the item in its social, historical, and cultural context. The finding aids will be edited and published online, providing students a clear outcome and showing them that their research can have real world implications. The class will include a field trip to the largest jazz archive in the world, the Institute for Jazz Studies in Newark.
01:090:101 section 23 index 11051
First-Year Seminars: SOCIAL SCIENCES

What is so Public about Our Streets?
Juan Ayala (Planning and Public Policy)

Streets are our most public image of a city. Yet, in our daily routine as we navigate through them, we often do not think about how the design of these public places draws us into private properties to shop, play, exercise, reside, work, and find entertainment. In this seminar, students will learn how visual cues in our environment help us understand the extent of the public realm (our streets), and how it is designed to shape our way of life. In the past ten years, NYC expanded its perception of the public realm into landmark buildings with the intent of encouraging physical health, promoting entertainment, stimulating commerce, and activating land uses. We will travel to NYC so students can experience and document their interpretation of how an environment reads. Some of the places we may explore are the High Line, Lincoln Center, Bard College, Time Warner Building, The New York Times Building, The Cube, NY City Library, Battery Park City, other up-and-coming landmarks, and major avenues. We will use photo-simulations and 3D models to provoke discussion and describe the technical and legal aspects of the pedestrian realm. Ultimately, we want to understand just how much design and collaboration between private and public land goes into creating these appealing environments.

01:090:101 section 05 index 1701

"It’s Not Fair!" Complaining in Everyday Conversation
Galina Bolden (Communication)
Jenny Mandelbaum (Communication)

This seminar will examine complaints in everyday conversations. Complaining is a pervasive human activity that can have devastating or positive consequences. In this class students will examine complaints that occur in audio and video recordings of naturally-occurring conversations. Our goal will be to determine how we produce and react to complaints in our personal and professional lives. We will consider the implications and consequences of complaining in a variety of contexts, from dinner table conversations to customer service calls. We will also examine how complaints affect and are affected by our relationships.

01:090:101 section 08 index 05793

"Inner Engineering" for Wellbeing and Thriving in College, Work, and Life
Tracy Chang (School of Management and Labor Relations)

"Inner Engineer" is a comprehensive science-based yoga and meditation program designed by Sadhguru (2016). The program equips one with efficacious tools for one’s mastery of mind, body, emotion, and energy. This mastery enables students to be energetic, joyful, mindful, healthy, and fully engaged and realize his/her highest potential in college, work, and life. Students will complete the Inner Engineering program—9 online video lessons and a 48-Day Inner Engineering Challenge and write a 3-page reflection paper. Students will also learn about research on the impact of Inner Engineering program on employee wellbeing and engagement in the workplace.

01:090:101 section 04 index 09985

Talking Politics: Disagreeing Without Being Disagreeable
Randi Chmielewski (Eagleton Institute of Politics)
Elizabeth Mattio (Eagleton Institute of Politics)

In order for democracy to work, citizens need to be able to talk to each other. Addressing public policy challenges such as stable economic growth, health care, and college affordability requires reasoned deliberation, critical thinking, and open and civil discourse—the exchange of ideas from different perspectives based on shared facts and conducted with respect and curiosity. Unfortunately, such models of political discussion can be few and far between in contemporary American politics. This seminar considers why engaging in honest but civil political discussion is integral to American democracy’s success and explores productive ways to go about it. Topics that we’ll consider include: What are the effects of adversarial political interactions on the political process? What steps can be taken to ensure that political discussions are productive? How can we have respectful and honest conversations about public problems and their proposed solutions when we disagree? Students will observe and analyze a range of political exchanges, such as contemporary and historical candidate debates, legislative sessions, and media coverage. The course will also provide opportunities for direct interactions with political practitioners.

01:090:101 section 60 index 08031

The Power of One: Understanding Resilience and Relationships
Caroline Claus-Ehlers (Education Psychology)

No matter who you are or where you come from, your life is bound to be crowded with challenges. How do individuals successfully overcome challenges? This is the central question of resilience research; research on how people “bounce back,” adjust to change, and overcome adversity. This research shows that having just one important personal relationship is the most important factor that promotes individual resilience. In this seminar, we will explore resilience and relationships in the lives of students. After briefly reviewing the history of resilience research, including the professor’s own investigations in this area, our class discussions will connect resilience research with many types of relationships: mentors and peers in college, family relationships, relationships at work, and romantic relationships. We will also touch on resilience and gender identity.

01:090:101 section 17 index 05798

Emerging Issues in Homeland Security and Public Safety
John Cohen (School of Criminal Justice)

This seminar will explore current homeland security-related threats/issues facing the United States and how Federal, state, and local officials are working to deal with these threats. Specific areas of focus will include homegrown violent extremism, cyber attacks, international terrorism, trans-national drug trafficking, intelligence and information sharing, and immigration. Students will have the opportunity to interact with professionals from the homeland security and law enforcement professions.

01:090:101 section 06 index 08006

Yankee Stadium
Teresa Collins (Thomas A. Edison Papers)

Why did the Stadium cross the road? In this seminar we develop multiple perspectives on the history of Yankee Stadium and its epic journey from “The House that Ruth Built” to its current home in the Bronx, New York. We will observe and analyze a number of related themes and issues, including relationships between public finance, private enterprise, and urban development. The flexible, situational character of change and tradition is examined as well. Students will explore potential topics and methods for their own research development.

01:090:101 section 14 index 05796
Data Doubles and Digital Traces
Kaitlin Costello (Library and Information Science)
Everyone has a data double, or a profile created by aggregating the data we produce every day. From selfies we take and share on Instagram to likes on Facebook, to surveillance, we all have a digital trail. Some of this data is data we intentionally create about ourselves, while some of it is created by others. What do your data double and digital trail say about you? How is this data collected, by what means is it aggregated, and for how long is it stored? And what do companies and other people do with this data? In this class, we will examine and think critically about our data doubles from the perspectives of personal and social informatics. We will begin by learning about the presentation of self in everyday life, a classic sociological theory. We will explore the “Dear Data” project, a data-driven endeavor between two artists that is now part of the permanent collection of the Museum of Modern Art. We will also discuss the personal and social implications of data doubles from a variety of perspectives. Finally, we will learn how we can gain some control over our own data doubles.

01:090:101 section 11 index 05795

Hunger and Food Insecurity in New Brunswick: A Service Learning Perspective
Carla Cuite (Human Ecology)
This seminar will introduce students to the problem of hunger and food insecurity in New Brunswick, how it is measured, and programs designed to address it. Students will have the opportunity to visit and work at two food pantries and one soup kitchen, all located in downtown New Brunswick. Five additional hours of service in a food-related environment will be required. The importance of civic engagement and additional opportunities for service learning will be discussed throughout the semester. Students will write a reflection of what they have learned over the semester. Students must be 18 years of age when the course begins.

11:090:101 section 12 index 17180

Fundraising Principles: Raising Money for Good Causes
Richard L. Edwards (Chancellor Emeritus and University Professor)
How do nonprofit organizations raise money? In this seminar you will gain knowledge and skills to help you think about and practice fundraising events on campus, in your community, and beyond. Building on fundraising experiences you may have already had in community, school, or faith-based organizations, this seminar will introduce you to the basics of fundraising theory and practice, including special-event planning, individual solicitations, and telethons. Participants will benefit from Rutgers fundraising experts and guest speakers. The seminar includes discussions, role playing, and presentations, and the class will review fundraising events that have been successfully implemented by local nonprofit and public charity organizations.

01:090:101 section 10 index 21092

Arts and Politics: The Intersections of Policy and Art in the Twentieth and Twenty-First Centuries
Donna Gustafson (Zimmerli Art Museum)
Hal Salzman (Planning and Public Policy)
This seminar will examine major American political controversies such as migration, war, urban transformations and gentrification, race, and globalization through the lens of photography, film, and other visual arts. The seminar explores Art (Gustafson) and Public Policy (Salzman) to examine how current policy issues have been and are represented in visual arts. We contrast contemporary policies and art with representations in the past. For example, how the arts reflected/use used in Vietnam war policy debates and protests, as contrasted to visual representations of American reactions to the Iraq/Afghanistan wars; of the “Great Migration” of African Americans to the North and the transformation of urban centers in industrialization and then deindustrialization, of suburbanization (e.g., through the works of Bill Owens), and then the movement to urban gentrification (e.g., works of Martha Rosler of Greenpoint, Brooklyn); of the 1960s/70s protest movements as compared to contemporary protest movements such as Occupy Wall Street, Women’s March, and Black Lives Matter; and Cold War art/politics and contemporary global politics and art. The students will visit the Zimmerli Art Museum to engage with historic and contemporary examples of protest art, watch important films, and take trips to NYC to experience policy-making at the UN and artists’ reflections on public policy in a contemporary art gallery exhibition. Through this intersection of art and politics, students will learn to unpack the visual politics of images and propaganda and also learn to visualize the effect of policy on those for whom the political is personal.

01:090:101 section 56 index 09041

Criminal Court War Stories
Milton Heumann (Political Science)
This seminar begins with the reading of an engaging journalistic account of the world of criminal justice in a Chicago courthouse. Next, we will discuss the general context of criminal-case processing in the U.S. And finally, four or five leading criminal attorneys will visit our class and share the one case that stands out in each of their legal careers. Their “war stories” will include detailed descriptions of these cases, including an analysis of the key decision points made along the way. Through class discussion, students will develop their own considered views of the final results of each case.

01:090:101 section 33 index 05806

Getting It Done: Managing Information for Better Performance
Triveni Kuchi (Rutgers Libraries)
With emerging information and communication technologies, the plethora of information constantly generated is overwhelming. Such an information environment directly affects the way you discover, keep, use, or re-use information for your research. How do you manage your bazillion files? What organizing schemes or strategies for managing information are out there? What works, what doesn’t, and why? This seminar will focus on understanding what information management entails, and how it requires an active, deliberate selection among alternatives, and a critical and habitual pursuit of analyzing and re-categorizing information. Through readings, class discussions, hands-on labs, and guest speakers, students will reflect, analyze, compare and use information organizing schemes or tools for managing a variety of different types of information. Students will creatively explore particular information management tools that are used at either the organizational or individual level in more detail. Upon completion of this seminar, students will become savvy information managers, and gain important critical-thinking skills broadly applicable for their study, research, jobs, and careers.

01:090:101 section 53 index 20942

Posts and Presentations: Recollection, Archives, and Curation of Time
Triveni Kuchi (Rutgers Libraries) Anjali Nerlekar (AMESALL)
How is memory created and archived? In what ways can memory be accessed? Are there personal and public memories? Can memories be fabricated and distorted? In this seminar we will examine these questions from literary, information, and archival studies perspectives. Through class discussions, guest lectures, films, and field trips we will learn more about what and how we create, keep, find, remember, and forget information about our past and present. For final presentations students will explore false memories, digitized memories, personal and public memories, and the impact of memory and its relation to imagination and the society.

01:090:101 section 52 index 05811
Diversity and the Politics of Higher Education

Catherine Lugg (Education Theory, Policy, and Administration)

This seminar will explore the issues involved with “Diversity and the Politics of Higher Education,” and is designed to serve RJH students—or the first generation in their family of origin to attend college. Taught by a professor who is also first generation, we will address diversity (racial, ethnic, gender, class, language, religious, sexual identity, and disability) and how these issues of diversity shape the politics of higher education and “who gets what, when and how” (Laswell, 1936). For example, Affirmative Action remains a topic of blistering political attack, yet there is striking political silence on the advantages elite whites receive in college admissions thanks to the “legacy system.” At the close of the class, students will have the opportunity to speak with leading Rutgers professors and administrators who are first generation college attendees and learn about their collegiate experiences.

01:090:101 section 85 index 10001

Politics 2018: A “Year of the Woman”?

Ruth Mandel (Director, Eagleton Institute of Politics)

Debbie Walsh (Director, Center for American Women and Politics)

The 2016 defeat of the first woman to head a major party’s presidential ticket—and the words and deeds of the winning candidate and his alles—sat in motion a wave of women’s activism. Frustrated with the status quo and energized by the #MeToo movement, women have been seeking to seize power and disrupt politics as usual. From the January 2017 Women’s March to the unprecedented surge in women challenging incumbents in Virginia’s 2017 state legislative elections, the growing politicization of women, particularly on the Democratic side, has been widely reported. Will it translate into electoral success in the mid-term elections of 2018? In this seminar, we will explore many themes important to understanding women as candidates, voters, and activists in the 2018 elections. Exports from within and beyond Rutgers will speak to the class to help us analyze the news as it unfolds.

01:090:101 section 63 index 12289

Collaboration for Learning and Performance

Angela O’Donnell (Education Psychology)

This seminar will introduce students to collaborative and cooperative learning. We will explore ways to create successful learning and work teams. The content of the course is intended to provide some practical help to people who wish to use cooperative and collaborative learning in their classrooms or in other situations. We will explore what it means to be collaborative or cooperative and what impediments there might be. The primary focus of the seminar is on understanding why one might use cooperation or collaboration by examining underlying theory that might inform practical choices. The seminar will explore the journey towards a cooperative spirit and the outcomes that can result.

01:090:101 section 68 index 09996

Media in the Digital Age

John Pavlik (Journalism and Media Studies)

Emerging communication technologies have the power to affect everything from personal relationships to presidential races to the success of a new restaurant. In this seminar, we will focus on understanding the changing nature and impact of digital technology on media and society, including social media, and their consequences, especially implications for civility, democracy, journalism, and beyond.

01:090:101 section 13 index 11050

War and Film

Alexander Pichugin (German Language and Culture Studies)

This seminar is open to any student interested in history, politics, and the cinema. It introduces students to the analysis of the cinematic representation of war, which dates from the early cinematic reenactments of the Spanish-American War in the late 1890s and continues until today with grand-scale productions such as War of Thrones and Star Wars. This seminar examines the representation of war and related concepts (peace, politics, military power) in film. In exploring these topics, we will try to answer the questions: What is war? How are military conflicts reflected and constructed in film? What role did war play in the history of the cinema? How is war interpreted in film? By studying different varieties of feature and documentary films in relation to the representation of war and related concepts, students will gain insights into ideas, trends, and discourses that have shaped contemporary culture.

01:090:101 section 74 index 11212

Human Languages and Human Nature

Paul Pietroski (Philosophy)

What are languages? What’s special about the languages—e.g., spoken English and ASL—that human children can so rapidly acquire? In what ways are humans linguistically special, compared with other animals? And how might our distinctive linguistic capacities have emerged in natural history? The goal of the seminar is to provide an accessible introduction to these questions and how we can start to address them, given tools from linguistics, psychology, and philosophy.

01:090:101 section 75 index 12382

Revolutions in Transportation

Kecie Ralph (Planning and Public Policy)

Michael Smart (Planning and Public Policy)

This seminar explores revolutionary transportation technologies. Approximately one third of the seminar will examine past revolutions in transportation that have shaped our daily lives and the city as we know it, including railways, streetcars, the automobile, and the airplane. We will then examine ongoing revolutions in transportation, including high-speed rail, car-sharing, on-demand taxi services like Uber, freight containerization, and the logistics revolution. Finally, we will examine emerging technologies that may reshape our daily lives and the urban experience, including autonomous vehicles and the Hyperloop. Students will research a transportation revolution of their choosing and present on the topic to the class. The seminar will also include a field trip to a freight distribution center and a transportation operations center.

01:090:101 section 80 index 09033

Disparities in Health and Public Policy

Jeanette Rogowski (Health Systems and Policy)

The United States is one of the wealthiest countries in the world and has the best health care system. Yet, the health of the American population is poor compared to other industrialized nations. One of the main reasons is the existence of wide disparities in health status across population groups, particularly by race and socioeconomic status. This seminar will introduce students to research that addresses the underlying reasons for these observed disparities drawing largely on my own research on these topics. This will include discussions of multiple topics such as neighborhood and community characteristics of residence over the life course and access to high quality health care services. Possible public policy responses to reduce observed disparities will be discussed.

01:090:101 section 55 index 11053

Friendship in Japan: A Cross-Cultural Inquiry

Paul Schalow (Asian Languages and Cultures)

Friendship can be understood as the human need to appreciate and be appreciated by another person. At first glance, it seems a natural and unproblematic part of our lives. But, when dealing with friendship across cultures, the concept of friendship becomes surprisingly complex. In this seminar, students will draw on their experience of Japanese pop culture, cinema, and texts to explore how friendship is configured across divisions of age, status, ethnicity, gender, and even species. Students will also share their own stories of how friendship is represented in literary and cinematic traditions besides Japan’s.

01:090:101 section 69 index 17165
Transforming Diverse Bodies and Identities in American Culture

Mark Schuster (American Studies; Dean for Graduate Student Life)

The American body has been transformed over time physically, socially, culturally, and politically. This seminar examines negotiated and diverse identities, “covering and passing” bodies through the lens of gender, sexuality, race, socioeconomic class, ability, and more. Social media, film, art, music, fashion, and pop culture will be used to examine sites and spaces of the body. Diverse methodology of interdisciplinary research, journal articles, ethnographies and book chapters will be used to interrogate recent transformations of bodies and identities in American culture. The evolving, fluid, and intersecting body fascism, bodies at war, smashing bodies (NASCAR and MMA), collision sports, head injuries, and reassembled (prosthetics and cyborg) bodies will be considered. The most recent research redefining the “healthy” and “spoiled” bodies will be examined critically. Cyber technology, robotics, and fantasy will be examined through the influence of Barbie Dolls, action figures, Marvel comics, Comic Con, Trekkies, J.K. Rowling, E.L. James to C.S. Lewis and J.R.R. Tolkien.

Governors: The Most Overlooked Powerful People in Politics

Kristoffer Shields ( Eagleton Institute of Politics)

Four of our last seven presidents were governors. In the 2016 primaries, 11 sitting or former governors officially announced their candidacies. And as we look ahead to 2020, governors and former governors will once again be on the short lists of potential candidates. As the chief executives of their states, governors shape policy, set the state agenda, and act as their state’s representatives in the public eye. That not only makes some of them logical presidential contenders, but also usually the most important and powerful person in the state during their term(s) in office. In 2018, thirty-six states will hold gubernatorial elections. Will Democrats be able to cut into the republicans’ record high number of governorships? Which races are the most closely contested? Which are the most fun? In this seminar, we will answer those questions and also look at the role of the governor in the future of our democracy. We’ll learn from expert analysts, campaign professionals, gubernatorial staff members, and a former governor or two, leading us to another set of important questions: Who becomes governor? Why do governors matter? Why should we care about governors of other states? How can governors support the presidential administration or be part of the resistance? What are the key issues in the 2018 races and what do they tell us about our political world? And perhaps most important: How can YOU be involved?

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.

Experiencing National Parks and Parklands: How Parks Are Shaped to Communicate With Us and About Us

David Tulloch (Landscape Architecture)

From Grand Canyon to Acadia to the Dry Tortugas, National Parks and Parklands are designed to send all sorts of messages to their visitors. This class will explore ways that national parks (focusing primarily on those in the US) communicate messages to visitors. Designers have also employed precisely aligned roads and buildings rich in symbolism to communicate with visitors at an experiential level. Published materials, such as the impressively consistent NPS brochures used at every park, and carefully designed signs provide an overt system of communication. The seminar will visit a NPS site to look for messages and learn more about this amazing network of natural treasures.

American College Experiences for International Students

Dake Zhang (Education Psychology)

In what ways is the college experience for international students the same for 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 seminar, we will share our personal experiences and use statistical 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.
Permaculture: Enabling Change for a Regenerative Future
Anita Bakshi (Landscape Architecture)

Permaculture involves creating integrated systems of food production, housing, sustainable technologies, and community development. Originally conceptualized as an approach to creating permanent agriculture, the permaculture movement has developed into a whole systems approach with concepts that can be applied to social, cultural, and economic systems. Permaculturists today include not only farmers, but also community organizers, social workers, and software developers. Beyond food systems and ecological design, permaculture principles can be used to rethink the built environment, business models, and decision-making processes. Seminar sessions will include lectures and documentary films about inspiring permaculture projects from around the world, class exercises that will help you feel empowered to make change, and short skill sessions. You will learn to apply small-scale interventions: use cardboard and old newspaper to sheet mulch, calculate rainfall on your roof and find ways to collect it, find healthy wild food and medicine, set up a currency-free barter market, and begin to compost—even if you have only the space under your kitchen sink to do it.
11:090:101 section 03 index 06526

Using Genomics to Study Microbial Diversity
Debashish Bhattacharya (Biochemistry and Microbiology)
Dana Price (Plant Biology and Pathology)

This Byrne Seminar poses the question: how many different species inhabit our planet? Answering this question is more difficult than you might think. This is because we need to figure out how to unambiguously identify different species, how to classify them, and how to figure out their interrelationships. In this seminar, we will focus on the most mysterious and species-rich branches of the tree of life—microbial “dark matter” that comprises millions of unknown bacterial and eukaryotic species that live in extreme environments such as deep-sea vents, in open oceans, soils, and in association with animals and plants. The critical contributions of this microbial world are becoming clear, given their role in human health, in plant productivity, and in sustaining life in many other habitats on Earth. We will review the search for microbial biodiversity using powerful new methods such as single cell genomics and metagenomics. These approaches not only allow us to estimate microbial species numbers but provide an estimate of the total number of unique genes that exist on our planet and how they interact with each other. The seminar will include a visit to a modern genome center where high throughput DNA sequencing is done and will provide some basic training in the analysis of metagenomic (environmental DNA) datasets.
11:090:101 section 20 index 11054

Big Data: Revolution and Reality
Javier Cabrera (Statistics)
Ryan Womack (Rutgers 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 61 index 09042

Eliminating Cancer: Novel Targets and Therapeutic Approaches
Sunita Chaudhary (Rutgers Cancer Institute of New Jersey)

In this seminar learn how the most recent discoveries through cancer research are being translated into cutting edge treatments for cancer patients. New approaches utilizing computer-assisted diagnostics, medical imaging, and statistical pattern recognition allow for a more accurate diagnosis of a range of malignancies. Comprehensive genomic profiling of tumors through next-generation sequencing technologies offers the promise of personalized cancer therapy with targeted drugs. We will discuss the innovative immunotherapy approaches that are being utilized to harness the immune system in the fight against cancer and translational clinical trials that are being tested to study novel drugs in patients.
01:090:101 section 12 index 09987

The Fungus Among Us
John Dighton (Ecology, Evolution, and Natural Resources; Director of Pinelands Field Station)
Katie Malcolm (Ecology, Evolution, and Natural Resources; Manager of Pinelands Field Station)

Fungi rule the world, but the influence of fungi on our planet and lives is frequently underestimated. This seminar will familiarizes students to the fascinating field of mycology. After an introduction to fungi (they are not plants!), we will discuss their significance in industry (e.g. food, alcohol fermentation), medicine (e.g. pharmaceuticals, diseases) and ecology (e.g. decomposition, biodiversity). The seminar includes 1-2 field trips to the Rutgers Pinelands Field Station, located in New Lisbon, N.J. At the field station, students will learn common field and laboratory techniques in mycological research and be able take part in an active field station. The seminar may also include a field trip to a commercial environmental testing laboratory, brewery or winery.
11:090:101 section 10 index 17167

Cells Have Feet and Sticky Fingers: The Discovery of Adhesion Molecules
Ramsey Foly (RWJ-Surgery)
Beatrice Haimovich (RWJ-Surgery)

Tissue engineering requires a basic understanding of how cells interact with one another to form organs. In this seminar students will learn about two families of adhesion molecules: integrins and cadherins. Integrins function as sticky feet, anchoring cells to surfaces. Cadherins, on the other hand, form sticky fingers, which mediate cell-to-cell interaction. We will discuss the guiding principles of each family, provide examples of how family members function in various cell types, and examine their role in several biologic processes. We will learn about molecular and biophysical mechanisms that populations of cells use to rearrange themselves into well-ordered structures. Finally, we will come to understand how this knowledge can be applied to generate artificial bioengineered tissues.
01:090:101 section 18 index 05799

First-Year Seminars: SCIENCES
The New Theory of Human Memory
Arnold Glass (Psychology)

In this century, there has been a revolution in our understanding of what human memory is and of the neural basis for human memory. We will analyze five classic experiments that transformed the description of memory from a passive recording device to an active system that is constantly being transformed by new information. These include an experiment that reveals a surprising discontinuity between faces that are recognized and faces that are not recognized and an experiment demonstrating how easy it is to induce false memories.

01:090:101 section 28 index 05804

Immigration and Diversity in Higher Education: Students’ Journeys and Successes
Peter Guarnaccia (Human Ecology)

Several recent studies have found that immigrant students perform better than U.S.-born students in college. What drives immigrant students to succeed in higher education? One factor appears to be the skills immigrant students learn while balancing keeping their family cultures alive and learning U.S. culture. Another is the “immigrant bargain” that forms between parents who sacrifice to bring their children to the U.S. for educational opportunities and the drive of immigrant students to succeed as a result. We will look at a range of research and popular literature on this topic. We will especially focus on a book Dr. Guarnaccia is writing on this topic based on a study of immigrant students at Rutgers that incorporates a mix of qualitative and quantitative methodologies to provide a rich portrait of student experiences across the full diversity at Rutgers.

01:090:101 section 32 index 062352

Traditional Organic Food and Farming Systems
Joseph Heckman (Plant Biology and Pathology)

Before supermarkets and the modern obesity crisis, we were closer to the source of our food. Fresh foods from fertile soil were consumed raw or specially prepared by fermentation. Milk, meat, and eggs were obtained from animals on pasture. Soils were maintained with compost and by keeping livestock and crops together. In this seminar, we will study traditional organic food and farming systems through field trips and from selected writings of organic pioneers. Students will be encouraged to apply the complementarian perspective to solving practical problems facing contemporary human society.

01:090:101 section 40 index 05808

Medical Literature: Discovering and Evaluating Commercials and Study Information
Evelyn R. Hermes-DeSantis (Pharmacy Practice and Administration)

In this seminar students will be exposed to discovering and evaluating the information provided in medical commercials and headlines of the day. When you see the latest weight loss ad, what does it really mean? When you see the latest headline declaring that coffee is or is not good for you, how do you know what the information is based on? Students will look at recent medical headlines and current medical-based commercials. They will learn how to find the information behind the latest news items and will be given the skills to critically evaluate and apply the information to their everyday life.

01:090:101 section 34 index 17155

Complementarism: A Science-Based Philosophical Framework for Integrating Irreconcilable Opposites
Sungchul Ji (Pharmacology and Toxicology)

Complementarism is the philosophical framework constructed on the basis of the postulate that the principle of complementarity formulated by Niels Bohr in quantum physics can be applied to biology, philosophy, and religion. In this seminar, we will explore the version of complementarism that the instructor began to develop in the 1970s, motivated by two realizations. First, that information and energy are the complementary pairs that are essential for explaining the phenomenon of life. And second, that similar triadic relations exist in the philosophy of Lao-Tzu (604 BC - 74), Aristotle (384 BC - 322 BC), Spinoza (1632 - 1677), and Maurice Meriau-Ponty (1908-1980). Students will be encouraged to apply the complementarian perspective to solving practical problems facing contemporary human society.

01:090:101 section 88 index 10003

Pollinators and Garden Design
Christina Kaunzinger (Landscape Architecture)
Kimberly Russell (Ecology, Evaluation, and Natural Resources)

Explore the relationship between pollinators and garden design on the newest campus Living Lab. Can plantings at home, at work, and on campus enhance pollinator abundance and diversity? Do some gardens support more pollinators than others? Students will address these questions by monitoring plots installed by the Landscape Architecture Planting Design Course in the Living Labs complex located around the Institute of Food, Nutrition, and Health on the Cook/Douglass campus. Class time will focus on active learning experiences: pollinator observation in the field, plant identification in the lab, data analysis in Excel, and creation of communication products.

01:090:101 section 23 index 12299

Jersey Shore and Estuary Environments
Michael Keninish (Marine and Coastal Sciences)

This seminar will examine the environmental characteristics of shore and estuary environments in New Jersey, including the physical, chemical, and biological aspects of these systems. Some of the topics that will be covered include nearshore ocean waters, beaches, dunes, back bays, estuaries, biotic communities, pollution, water quality, human use and impacts, climate change effects, coastal storms, recreational and commercial value, as well as management and policy elements. The focus will be primarily on New Jersey estuaries: Newark Bay, Raritan Bay, Barnegat Bay-Little Egg Harbor Estuary, Mullica River-Great Bay Estuary, coastal lagoons from Absecon to Cape May, and the Delaware Estuary and Bay.

01:090:101 section 07 index 14134

Kids and Medicine
Kafelin Kilmer (Pharmacy Practice and Administration)
Pooja Shah (Pharmacy Practice and Administration)

Everyone remembers receiving medicine when they were children—maybe it was amoxicillin for an ear infection or maybe acetaminophen for a fever. But how do medicines that were originally designed for and tested on adults work on children, an incredibly diverse population weighing anywhere from 1/4 lbs to 200 lbs? How can we give small children medicines that is only available as a tablet? How do we administer medicines intravenously in tiny doses to premature infants? How are dosages determined when there is no way to perform drug trials in children? In this seminar, we will explore the unique challenges of medication administration to children. Students will learn to think creatively about how to solve medication issues for children, providing excellent background and preparation for students interested in pharmacy, medicine, nursing or parenting.

01:090:101 section 88 index 10003
Clean Energy: Batteries and Solar Cells
Lisa C. Klein (Materials Science and Engineering)
What is needed to improve the sustainable energy technologies we already have? What is needed to make new technologies practical and clean in the area of energy generation? We will explore energy storage devices such as batteries and energy conversion, and solar cells and fuel cells. We will talk about active research at Rutgers on alternative energy materials and systems. In the lab, we will assemble and test our own dye-sensitized solar cells.
01:09/101 section 49 index 08029

Flying Faster Than the Speed of Sound
Doyle Knight (Mechanical and Aerospace Engineering)
On October 14, 1947, the sound barrier was broken for the first time in a manned level flight in the Bell X-1 piloted by Chuck Yeager. This remarkable achievement, due to the efforts of many engineers and scientists, marked the beginning of the age of supersonic aircraft. The seminar will examine the contributions of many of these pioneers, including Ackerley, Blusseman, Prandtl, Tupolev and many others. The crucial role of the development of turbojet and turbofan propulsion systems will be reviewed. Both U.S., European, and Soviet Union (now Russian Federation) aircraft will be considered. The seminar will conclude with a visit to the Smithsonian Air and Space Museum in Washington, D.C.
01:09/101 section 72 index 09045

Computing a Metaphor
Casimir Kulikowski (Computer Science)
Charles McGrew (Laboratory for Computer Science Research)
Computer language processing relies mostly on using very restricted notation, syntax and semantics: programming languages, like Java, or C—deliberately simplify the language to make it easy for the computer. in notation, syntax and semantics: programming languages, like Java, or C—deliberately simplify the language to make it easy for the computer. In contrast, the languages we humans use are much richer, including slang, and metaphors: “Time flies like an arrow”; “I was glued to my seat.” Visual metaphors are not only fundamental to how we communicate with each other but also critical for describing how we think and reason about the world. In all fields of study: the sciences, humanities, and professions like medicine and law: This seminar will explore “figurative reasoning”, how we think about thinking, including metaphor, and how we can incorporate these concepts into artificial intelligence (AI) programming in science and medicine, for the design and modeling of systems.
01:09/101 section 51 index 05810

Engineering Immersion: Utilizing the Patient Perspective and Environment in Biomedical Research
Kristen Labazzo (Biomedical Engineering)
Natalie Macion (Biomedical Engineering)
The goal of this seminar is to bridge the gap between the biomedical engineer and end user in order to improve the quality of research and ultimately the products and innovations that could result. The gap between the biomedical engineer and the end user is essentially the lack of direct clinical observations by the product innovator (the engineer), and therefore is a significant barrier to correctly understanding the needs of the end user. The sooner a student biomedical engineer grasps the concept of the importance of direct clinical observations to successful product design, the more successful the student will be as a biomedical engineer in his/her postgraduate career. Students will get a chance to “immerse” themselves in environments that are conducive to medical advancements such as hospitals, nursing homes, and facilities for the physically disabled. Students will learn how this immersion and knowledge of the end-user environment can improve their research skills. Further, students will also get to talk to and interact with patients in order to gain a new appreciation of a potential career in medical research, and to see first-hand how medical innovations have improved their quality of life.
01:09/101 section 31 index 05805

The Arrow of Time: Studies of Decay, Entropy and Timekeeping
Amit Lath (Physics and Astronomy)
In this seminar we will investigate the concept of The Arrow Of Time by first understanding entropy. We will learn to use the Python programming language to calculate probabilities, and from that develop an understanding of entropy and the second law of thermodynamics. We will discuss the ideas of entropy and decay as they appear in literature and culture, including the hold they have in the collective imagination that leads to the rejection of quantitative metrics that show disease, war, and violence decreasing, and the average human condition improving. Finally, we will divide into groups to design and construct working time measurement devices. Using common available materials, the groups will make devices to measure one hour as accurately as possible. No clocks allowed!
01:09/101 section 58 index 12383

R3DP 3D Printing and the Future of How We Make Things
Howon Lee (Mechanical and Aerospace Engineering)
Three-dimensional (3D) printing is a manufacturing technique in which a 3D physical object is created by directly joining constituent materials. 3D printing has received significant attention in recent years due to its potential impact in industry, defense, healthcare, and even for hobbyists. This seminar series will introduce the principles of various 3D printing technologies, their capabilities and limitations, and emerging applications of 3D printing. In addition, recent implementations of 3D printing will be introduced including 4D printing and bio-printing. Students will have opportunities to use 3D printers to print their own 3D designs.
01:09/101 section 15 index 05797

Building a Schoolyard Garden
Arianna Lindberg (Landscape Architecture)
Holly Nelson (Landscape Architecture)
School gardens have a long history in the United States and have the capability to support academic, community and social development, promote healthy lifestyles, and foster ecological stewardship. This seminar is a collaboration with the Rutgers Psychology Child Development Center for whom we will build and plant a series of raised vegetable garden beds. The Center is a twelve-month preschool, sponsored and operated by the Psychology Department and located at the Institute for Food, Nutrition and Health (IFNH) on Cook Campus. It has been providing early care and education for children 1-5 years of age since 1980 with a mission to provide a wide range of enriching and recreational activities in an environment that is conducive to discovering joy in learning. The garden beds will provide a dynamic space for hands-on activities and a direct source of fresh produce for the preschoolers and staff throughout the year. Students participating in the Schoolyard Garden seminar will acquire knowledge related to the incorporation of gardening and sensory exploration in early childhood education and development. This will be facilitated through readings from Richard Louv’s Last Child in the Woods and the Collective School Garden Network, as well as through small group development of a preschool-level garden lesson plan that the Child Development Center can utilize. This lesson plan may explore plant morphology, nutrition, soil, or other ideas that make use of the garden as a living laboratory. Students will also gain first-hand experience regarding cross-disciplinary collaboration on campus, and will become familiar with basic methods of extending the growing season and planning for different seasons of cultivation.
11:09/101 section 05 index 14133

What’s in your Food?
Karl Matthews (Food Science)
The seminar provides a window into the world of food microbiology and food science. Popular trends and myths (the five-second rule) related to food microbes will be discussed. Was eating that pizza left out overnight a good idea? Discussion will center on topics including probiotics, double-dipping, and how to avoid foodborne illness when traveling. The issue of food additives/antimicrobials and natural food preservatives will be addressed in the context of food safety.
11:09/101 section 08 index 14135

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 have been essential for the growth of commerce and communities in Northern New Jersey since before the American Revolution. This seminar combines field trips along the Delaware-Raritan Canal to examine hydrologic and chemical properties of the Raritan River. We will see on 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.
01:09/101 section 78 index 16850
Earthquake Resistant Structures: Shake Table Testing of a Balsa Building Under Simulated Earthquake Ground Motions

Husam Najm (Civil and Environmental Engineering)

Are you intrigued by earthquakes? Are you curious about learning why some buildings collapse during an earthquake while others don’t? In this seminar, we will learn about earthquakes and earthquake engineering, their history, their effect on buildings and bridges, and on human life. We will explore the basics of structural engineering, structural materials that can best resist earthquake shaking, and what factors contribute to a safe design of buildings in seismic zones. This seminar/project will include three activities: 1) designing and constructing a 6-story building structure made of balsa wood to resist ground shaking. The structure will be about 5 ft high and will be placed on a 1 x 2 x 2 ft shaker that will shake the structure simulating an earthquake event; 2) testing the balsa structure under various earthquake motions generated by the shaker, and 3) recording the roof acceleration of each structure and comparing the performance of the structures.

01:090:101 section 98 index 10308

How to Win a Nobel Prize and the Diversity of Methods Needed

George Pieczenik (Biochemistry and Microbiology)

The professor teaching this course worked with all the pioneering Nobel laureates of Molecular Biology. He published with Francis Crick, co-discoverer of the structure of DNA, and Crick can trace his scholarly lineage back to Sir Lawrence Bragg, Nobel Prize winner for Physics (1915), who is responsible for the Bragg law of X-ray diffraction. He published with Sir Aaron Klug, who received the Nobel for optical diffraction and the structure of TMV and with Nobel laureate Sydney Brenner, who discovered mRNA. In this seminar, students will learn about the Bragg equation and simplify it so they can use it to decipher Photo 51. Students will measure parameters from Photo 51 and then re-derive the structure of DNA. An exciting hands-on component of the class will include a lab exercise where students use laser diffraction to determine helical molecular structure. Students will also learn the logic of how Fred Sanger, who received two Nobel prizes, created his RNA and DNA sequencing systems. This changed the whole landscape of science and medicine forever.

11:090:101 section 26 index 12301

Exploring the Raritan River Basin

David Robinson (Geography)

This seminar will explore the physical geography of the Raritan Basin. The landscape of this basin, in which Rutgers is situated, will be investigated from geological, meteorological, and hydrological perspectives. Human impacts on the landscape from pre-Colonial to Modern times, and a look into the basin’s future will be addressed. Utilizing problem-based learning methods, students will investigate, for example, water quantity and quality, sources of pollution, and changing land use within the basin. The Rutgers Raritan River Consortium and basin partners associated with the Rutgers-led Sustainable Raritan River Initiative have produced a plethora of resources that will be used to support students as they explore these real-world local issues.

01:090:101 section 77 index 09997

Opportunities and Challenges in Nanomedicine

Charles Roth (Chemical and Biochemical Engineering; Biomedical Engineering)

This seminar will introduce students to opportunities and progress to date in nanomedicine, the application of nanotechnology to human health. Both technical methodologies and economic/social/regulatory considerations will be discussed. A number of the class meetings will feature instructor-guided discussions based on readings from both the scientific literature and popular press. Students will also be introduced to nanomedicine research at Rutgers through laboratory demonstrations or tours and via informal talks given by current undergraduate and graduate researchers.

01:090:101 section 27 index 17109

Endocrine Health and Diseases

Dipak Sarkar (Animal Science)

What are the health consequences of alcohol consumption? What is the relationship between stress, sleep disturbance and alcohol abuse? Does childhood neglect affect mental diseases? This seminar will explore these questions, and more, as students learn about various research approaches currently being used in Rutgers’ labs to understand how stress and alcohol consumption affect endocrine health and cause various diseases. Readings and discussions will focus on identifying the physiological mechanisms involved in various endocrine diseases.

11:090:101 section 15 Index 09199

The Self and its Disorders

Louis Sass (Clinical Psychology)

In this seminar, you will be introduced to current thinking about several personality disorders or mental disorders that involve major alterations of the self or sense of identity: narcissistic, borderline, schizoid, and schizophrenic conditions. We will discuss theories from psychodynamic, cognitive-behavioral, and existential psychology. We will pay special attention to the perspective of the suffering individual, the possible relevance of modern and postmodern cultural factors, and the relationship between madness and rationality. The seminar offers an introduction to some key topics in contemporary psychiatry and clinical psychology.

01:090:101 section 46 index 11052

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 along with the current mysteries and unknowns. Through discussions, students will gain an idea of what fundamental physics research is and the pressing questions that are currently striving to answer. The seminar 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 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 83 index 09999

Pets and Parasite Diversity

Michael Sukhdeo (Ecology, Evolution, and Natural Resources)

In nature, parasites have the most common feeding strategy of all animal forms, and they utilize diverse strategies to extract resources from their hosts. We think of parasites in terms of the diseases they cause in humans, in our pets, and in our domestic animals. However, over the last decade, there have been many studies that try to include parasites into the ecology of food webs, and these new ideas have altered our thinking on the treatment of parasites. This seminar will focus on the diversity of parasites of our pets and wildlife. There will be field trips to domestic animal farms, to ponds and to the ocean to collect parasites. There will be hands-on labs where students will learn standard parasitological techniques, in worms, recovery and identification, including necropsies and fecal analyses. Short mini-lectures on parasites in the context of natural systems and their basic biology will precede every meeting.

11:090:101 section 14 index 09389
Traditional Byrne Seminars are designed to introduce incoming students to Rutgers faculty and to the exciting research being conducted at one of the nation's top research institutions. The Aresty Research Center builds on this introduction by placing undergraduates with faculty mentors. With the Aresty-Byrne Seminars, these two signature educational initiatives in the Office of Undergraduate Academic Affairs, are collaborating to meet the increasing student demand for research-based learning opportunities. Aresty-Byrne Seminars take traditional Byrne Seminars one step further and ask students to participate in their professors’ research through the practical application of knowledge. In other words, these seminars expose students to the activities of research—from building robotics to collecting specimens in the field to working through an archive. Professors leading these courses then offer an Aresty research project for the next year, and select students from the seminar as research assistants.

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.

Secrecy, Transparency, and (In)Visibility
Jack Bratich (Journalism and Media Studies)
Craig Scott (Communication)

Through much of recorded history, 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 unacceptable acts without being held accountable. Secrets may generally be disliked by society, but they can also represent some of our most cherished possessions. Yet, secrecy seems counter to pervasive calls for greater transparency in many societies. This tension surrounding the invisibility of secrecy and the visibility of transparency is of growing concern as citizens, organizational leaders, and government officials manage visibilities. This seminar will introduce students to some of the many manifestations of secrets and secrecy in our society (e.g., public secrets, secret societies, proprietary/trade secrets, top secret classifications, secret juries and police, secret saints, and even secret admirers). There is little doubt that we live in an era where demands for transparency and openness come face to face with the need for secrecy. By helping students to better understand the communication of secrecy, transparency, and (in)visibility, we can start to address in innovative ways some of the not-so-secret challenges that tensions of secrecy-transparency and invisibility-visibility present us in our daily lives.

The Psychology of Reasoning
Clark Chinn (Education Psychology)

People may try to think rationally and make sound decisions, yet they often fall far short. For example, people are sold on the latest diet fad even when the evidence strongly indicates that this diet is unsafe. When we make mistakes in seeking out and evaluating evidence, we may make decisions that harm our health, well-being, and happiness. In this seminar, we’ll examine research in psychology and education to learn practical techniques to evaluate evidence and improve your reasoning and decision-making ability. You will apply what you learn to analyze the reasoning of middle school students from a current educational psychology project investigating middle-school students’ reasoning. Our work will culminate in one or more presentations at the annual Rutgers Undergraduate Research Symposium.

Dracula: Bloodthirsty Tyrant or Great Ruler?
Nicholas Bello (Animal Science)

The historic Wallachian prince Vlad III Dracula (1448, 1456-1462, 1476) was not viewed by his contemporaries as an elegant, aristocratic vampire—fleshing the iconic performances of Bela Lugosi on stage and in film. Contemporaries indeed had their views about Vlad, and these were shaped and developed in quite remarkable ways from the mid-1460s into the 17th century. But a vampire he was not in Germany and western Europe. Dracula comes to be typecast as the most evil, bloodthirsty tyrant ever known in the annals of human history. But in eastern eyes, especially those of Greeks and Turks, he was the court of the Ottoman sultan Mehmed “the Conqueror.” And Russians in the retinue of Grand Prince Ivan IV “the Terrible.” Vlad Dracula was indeed harsh, but his violence and brutality had a moral dimension which elevated him to the stature of a “great ruler.” In this seminar we will research how these competing images were crafted, and carefully identify the evidence we have at our disposal to understand these evaluations—ranging from early printed pamphlets, to portraits and cryptopaints, to humanist histories, to post-Byzantine and Ottoman historical texts, to do Slavic tales and legends. Our focus on the early printed pamphlet will involve a field trip to the Rosenbach Museum in Philadelphia, to study up close the earliest German pamphlet vilifying Prince Dracula, and explore the nature of the earliest printed books and how they survive to the present.

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 additions, 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.
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 Seminars Program is pleased to offer seminars specifically designed for incoming Honors College scholars. Honors College Byrne 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)  
**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 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.

For more than 120 years, Rutgers, The State University of New Jersey, and Johnson & Johnson have partnered to advance academic, research, and community service endeavors. Building on this long-established relationship and legacy of leadership, these special co-taught seminars by Rutgers faculty and Johnson & Johnson professionals will enhance the learning experience of students from multi-disciplinary areas of study. This initiative expands research ties, while introducing first-year students to an array of career and educational opportunities. Students will explore areas of common interest to both Rutgers and Johnson & Johnson, including global public health, health and wellness, ethics, community and leadership.

**Why Is An Ancient Disease Still Killing Millions?**

**Stephan Schwander** (Director, Center for Global Public Health; Rutgers School of Public Health)  
**Chrispin Kambili** (Global Medical Affairs Leader, Global Public Health, Johnson & Johnson)

This seminar explores the global health priorities and disease burden, including HIV/AIDS, malaria and tuberculosis, diarrheal diseases and respiratory infections in children. We will look at global disparities, and the influence of poverty and socioeconomic status. Additionally, environmental factors, climate change and urbanization will be explored as a source of new challenges and opportunities for changes in the global public’s health. As a case study, we will look specifically at tuberculosis (TB), an ancient disease and the number one infectious killer globally. Despite scientific and social advances, a high burden of tuberculosis persists worldwide. We will review diagnosis, treatment and prevention of TB, drug resistance, the lack of drug options and difficulties to access drugs and efficient health care systems in low and middle-income countries. We will discuss the need for new drugs, including bedaquiline, the first new tuberculosis drug developed in the past 40 years. To deepen our understanding, we will consider the challenges of developing new medications, the ethics of testing new drugs, and the important contributions needed to control the global tuberculosis pandemic. For firsthand impressions of active global health research at Rutgers School of Public Health, students will visit the NIH-funded research laboratory of the course director with onsite learning during the seminar series.
The Secret Life of Art: A Forensic Exploration of Art and Cultural Objects

Johanna Bernstein (Assistant Dean for International Programs; Chemistry and Chemical Biology)

What is that sculpture made of? How does an artist choose which materials to use? How long will these materials last? How can you tell if something is a fake? We will answer these questions by looking at art and cultural objects from the point of view of an artist or craftsman, a scientist, an art conservator, and a historian. Using a series of case studies from museums and cultural institutions around the world, this seminar will show how technological advances have influenced the creation of art and our ability to examine them. Topics will include forensic analysis and the degradation of materials, technical art history, and analytical sciences applied to the preservation and conservation of historic objects.

The Same Old Song: Influence and Allusion in Popular Music

Christopher Doll (Music)

Is all pop music really the same? Are rock musicians more original than their pop counterparts? And what about hip hop—is sampling theft, or does it have artistic merit? These and other questions will guide us as we focus our attention on musical and lyrical details that raise issues of influence and allusion between songs from all over the popular music repertory. We will listen to artists such as Ray Charles, Elvis, The Beatles, Jimi Hendrix, and allusion between songs from all over the popular-music repertory. We will also watch musically intertextual films such as The Rocky Horror Picture Show, This is Spinal Tap!, and The royal Tenenbaums. We will investigate various dances, traditional arts and culture of Taiwan, the Philippines, and neighboring countries. Through the language of dance, students will learn traditional arts and culture using practices and modality that are fun, interactive and informative. This seminar is designed for students who want to expand their understanding of dance as an emblem of cultural identity and an expression of social order. Along with the practice of dance, we will explore how to prepare traditional foods associated with respective festivities. The food serves as a conduit for a holistic experience to deeper comprehension of Asian cultural arts and heritage. This seminar will include a field trip to New York City.

American Roots Music

Angus Kress Gillespie (American Studies)

American roots music encompasses blues, country and western, gospel, Cajun, and Tejano genres. This kind of music was nurtured and originated in small communities and spread across the nation. Eventually, in a new era of radio and recordings, these home-grown music traditions contributed to an explosion of American popular music. In this seminar, student participants will follow the remarkable story of this creative outpouring. Readings and discussions will focus on the pioneering geniuses who wrote the music and sang the songs.

Looking East: A Different Way of Learning Dance, Language, Traditional Arts and Cultures Through Movement

Paul Ocampo (Dance)

Chien-Ying Wang (Dance)

This seminar will investigate various dances, traditional arts and culture of Taiwan, the Philippines, and neighboring countries. Through the language of dance, students will learn traditional arts and cultures using practices and modality that are fun, interactive and informative. This seminar is designed for students who want to expand their understanding of dance as an emblem of cultural identity and an expression of social order. Along with the practice of dance, we will explore how to prepare traditional foods associated with respective festivities. The food serves as a conduit for a holistic experience to deeper comprehension of Asian cultural arts and heritage. This seminar will include a field trip to New York City.

How to Learn a Chinese Dialect

Richard V. Simmons (Asian Languages and Cultures)

Learn Cantonese, Taiwanese, Shanghaiese, and maybe even others! This seminar will introduce the fundamentals of a single Chinese dialect over the 10 week course. The specific language we will study will be chosen by a poll of the registered students before the class starts. By the end of the course students will be able to carry out simple, basic conversational tasks in the language, write the dialect in Romanization, and be equipped with the skills to continue to learn the dialect on their own. Successful completion of the seminar requires regular attendance and participation, as well as compassing and presenting a short conversational skit at the end of the course. This seminar has no prerequisites. Knowledge of Standard Chinese (aka Mandarin) is not required. Native and heritage speakers of Chinese dialects are welcome to take the course and to serve as linguistic informants or tutors.
What is so Public about Our Streets?  
Juan Ayala (Planning and Public Policy)

Streets are one our public image of a city. Yet, in our daily routine as we navigate through them, we often do not think about how the design of these public places draws us into private properties to shop, play, exercise, reside, work, and find entertainment. In this seminar, students will learn how visual cues in our environment help us understand the extent of the public realm (our streets), and how it is designed to shape our way of life. In the past ten years, NYC expanded its perception of the public realm into landmark buildings with the intent of encouraging physical health, promoting entertainment, stimulating commerce, and activating land uses. We will travel to NYC so students can experience and document their interpretation of how an environment reads. Some of the places we may explore are the High Line, Lincoln Center, Bard College, Time Warner Building, The New York Times Building, The Cube, NYC Library, Battery Park City, other up and coming landmarks, and major avenues. We will use photo-simulations and 3D models to provoke discussion and describe the technical and legal aspects of the pedestrian realm. Ultimately, we want to understand just how much design and collaboration between private and public land goes into creating these appealing environments.

Success in Schools: Why Being Smart Isn’t Always Enough!  
Timothy J. Cleary (Graduate School of Applied and Professional Psychology)

Ryan J. Kettler (Graduate School of Applied and Professional 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, families, and children to optimize learning and well-being. The content of the seminar will provide practical information that will help students not only learn about hot-topic themes in education, but also implement appropriate energy in everything from growing plants to clotheslines—and to insist that broader society do the same.

Religion and the Origins of Political Order  
Tao Jiang (Religion)

This seminar will examine the role various religions, such as Confucianism, Hinduism, Christianity, and Islam, have played in the origination 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, patronalism, bureaucracy, rule-of-law, and the relationship between church and state, contextualized in their historical background, thus helping us to better appreciate the contingency and vulnerability of a variety of modern political norms.
Using Film to Interrogate the Politics, Power, and HerStories of LGBTQ Social Movements

Mark Schuster (American Studies; Dean for Graduate Student Life)

Only recently have Americans begun to accept LGBTQ communities as an acceptable way of loving, living, and expressing. This seminar uses film portrayal of sexuality diverse communities as a critical lens of the personal and political power over human beings. Through film, the class will discuss cultural realities and perceptions, and what has changed in the American landscape for communities and persons, friends and families that identify as LGBTQ. We will review a social-movement that has transformed from “invisible” and “cloistered” to more public, authentic, and fluid identities, especially focusing on the emergence of bisexual and transgender identities. Finally, the seminar will reflect on how views expressed in films, cultures, and societies have changed over the decades.

Information Inequality

Lily Todorinova (Rutgers Libraries)

In this seminar, we will develop an understanding of information as a commodity, with a richly contested value for both individuals and societies. The seminar will engage with different types of information inequalities, such as those between economically rich/poor societies, as well as situations where information is restricted or censored. From the level of societies, information is politically and economically charged. The ubiquity of information technology in the West makes it easy to overlook the situations where information is restricted or censored. In interviews conducted with students who have served in the military at colleges and universities across the country, a common theme emerged. These students felt as if the campus community did not respect, understand, or appreciate their service which made them less likely to identify themselves. Military affiliated students expressed feeling as if they were judged unfairly because of their service and for some, the way in which the media portrays the military is to blame. This seminar will examine military culture and challenge these stereotypes in order to foster the creation of a more knowledgeable and welcoming campus community.

American College Experiences for International Students

Dake Zhang (Education Psychology)

In what ways is the college experience for international students the same for 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 seminar, we will share our personal experiences and use statistical 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.

Green Zone: Military Cultural Competency Training

Ann Treadaway (Director, Rutgers Office of Veteran and Military Programs and Services)

In interviews conducted with students who have served in the military at colleges and universities across the country, a common theme emerged. These students felt as if the campus community did not respect, understand, or appreciate their service which made them less likely to identify themselves. Military affiliated students expressed feeling as if they were judged unfairly because of their service and for some, the way in which the media portrays the military is to blame. This seminar will examine military culture and challenge these stereotypes in order to foster the creation of a more knowledgeable and welcoming campus community.

First-Year Seminars: SCIENCES

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 function, how/why we get sick, and how 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 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.

Batteries, Genes, and Beyond

Alex Bertuccio (Chemical and Biochemical Engineering)

Have you ever wondered how beer is made? Maybe how a battery works? Or for that matter, how anything in your life is made? This seminar series will take a look at some of the “behind the scenes” engineering that makes products you use in your everyday life ranging from plastics to batteries to beer. We’ll also delve into how some of these items affect the world. Other topics discussed are gene editing, gene silencing, the engineering behind an automobile, and how clean is your water?
This seminar will highlight the many ways that the brain changes itself. The technical theme is "neuoplasticity." Students will be exposed to concepts of experience-dependent changes in the brain due to learning and remembering, but also with respect to exercise, disease, addiction, and aging. Furthermore, we will discuss the many ways in which the brain changes under these conditions, even all the way down to genes and the epigenome. While doing so, this seminar will be in line with the Byrne Seminar 2018-19 theme of "Methodologies" by showing how novel neuroscience techniques and analyses were key to discovering neurolublity in synapses, circuits, systems, and molecules.

Data Science and Society
Harry Crane (Statistics and Bioinformatics)
This seminar will expose students to the fundamental role that probabilistic and statistical reasoning plays in our understanding of the world. The seminar will feature lively discussions about how probability is used to model how humans make decisions in cognitive science and law, to determine whether a finding is statistically significant throughout the sciences, to predict the outcome of an election in sociology and political science, to determine public policy, e.g., climate change and economic policy, and even to describe fundamental aspects of the universe in quantum mechanics.

Life on Earth, Mars, and Beyond
Kat Dawson (Environmental Science)
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 to determine if Mars had an environment capable of supporting small life forms called microbes. In this seminar, we will use what we know about life on Earth to ask questions about the origin, evolution, and distribution of life in the universe. We will search for microbes on our own campus that can provide a living reference for exploring extraterrestrial life. Using environmental samples collected on campus, we will conduct laboratory analyses to evaluate what signs of life might be left behind by microbes on Mars.

Cognitive Science Goes to the Movies
Jacob Feldman (Psychology)
Karin Stormswood (Psychology)
Movies are a virtual laboratory of cognitive science, from the perceptual functions and dysfunctions the movies depict. That allow viewers to comprehend the action on the screen as well as the psychological functions and dysfunctions the movies portray.

Revolutionary Remediation
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 industry and scopes 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 produced by scientists at Rutgers. This seminar will continue to load 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 seminar will continue an important Rutgers tradition by participating in laboratory research activities and developing ideas related to environmental cleanup in the Raritan River Basin.

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 the 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 potential challenges of anti-terrorist research.

Psychological Functions and Dysfunctions
The Movies
Alice); language disorders (L’enfant Sauvage); philosophical conundrums (The Matrix); working memory (e.g., Eternal Sunshine of the Spotless Mind); dementia (Still Alice); language disorders (Lou, My Name Is Lucy Blue); psychological disorders (Amnesia); and remembering, but also with respect to exercise, disease, addiction, and aging. Furthermore, we will discuss the many ways in which the brain changes under these conditions, even all the way down to genes and the epigenome. While doing so, this seminar will be in line with the Byrne Seminar 2018-19 theme of "Methodologies" by showing how novel neuroscience techniques and analyses were key to discovering neurolublity in synapses, circuits, systems, and molecules.

Is there life on Mars?
Max Haggblom (Biochemistry and Microbiology)
Lee Kerkhof (Marine and Coastal Sciences)
This seminar will examine the prospects of life on Mars, and elsewhere in the Universe. Not "little green men", but microorganisms. We will explore why life is thought to have evolved on Earth and, with a focus on microbial life, identify the limitations and constraints to life as we know it. We will discuss how the NASA Exobiology program aims to understand the phylogeny and physiology of microorganisms whose characteristics reflect the nature of primitive environments or exoplanets. By examining the requirements and limitations to life on Earth and elucidating diverse microbial metabolisms and adaptations to extreme environments we can understand the potential of life to adapt to conditions on other planets or icy moons.

The Fine Art and Science of Polyomigraphy
Bahman Kalantari (Computer Science)
Through a unique software called Polyomigraphy, you will be introduced to a fantastic, very powerful, and easy to use artistic visualization medium, where polymatix turn into 2D images that can be used to create artworks of diverse types, to invent games, and to discover new concepts as well as creative and innovative ideas that can be applied to many subject areas. Students of Polyomigraphy 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 Polyomigraphy 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.polyomigraphy.com or Polyomigraphy on Facebook for more information.)

Flying Faster Than the Speed of Sound
Doyle Knight (Mechanical and Aerospace Engineering)
On October 14, 1947, the sound barrier was broken for the first time in a manned flight in the Bell X-1 piloted by Chuck Yeager. This remarkable achievement, due to the efforts of many engineers and scientists, marked the beginning of the age of supersonic aircraft. The seminar will examine the contributions of many of these early pioneers, including Ackert, Busseman, Pardot, Tupalev and many others. The crucial role of the development of turboprop and turbojet propulsion systems will be reviewed. Both U.S., European, and Soviet Union (now Russian Federation) aircraft will be considered. The seminar will conclude with a visit to the Smithsonian Air and Space Museum in Washington, D.C.

Black Boxes and Black Hats
Casimir Kulikowski (Computer Science)
Charles McGraw (Laboratory for Computer Science Research) Artificial Intelligence (AI), and its most popular recent offspring "Deep Learning" hold many promises for improving our lives. "Internet of Things" (IoT) devices could use such techniques in new ways that we can barely imagine. But "deep learning" systems are generally "black boxes" whose internal workings are something of a mystery, even to their designers. We often don't exactly know how they do what they do. "Interactions between "black boxes" (and exploitation of security vulnerabilities in them) is a problem that has barely begun to be studied. How can we repair a system that we cannot fully describe that has been damaged, or held for ransom by the bad guys? This seminar will review the challenges that arise for security and safety of inter-connected systems of "smart, but black" boxes that make up the IoT, and discuss how AI systems will have to be changed in order to make them more transparent in their performance and easily and independently tested and verified.

Poisons and Poisoning: The History and Toxicology of the World’s Most Dangerous “Medicines”
Patrick Bridgeman (Pharmacy Practice and Administration)
Lena Struwe (Ecology, Evolution, and Natural Resources)
Plants have been utilized since ancient times in an attempt to cure disease and relieve suffering. Pharmacology, 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 medical 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; describe the toxicology and adverse effects attributed to medicinal herbal plants; identify future areas of drug development; and debate current controversies surrounding medicinal herbal drug use.

Medicinal Plants: The Essence of Diversity
Mary Bridgeman (Pharmacy Practice and Administration)
Lena Struwe (Ecology, Evolution, and Natural Resources)
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Earthquake Resistant Structures: Shake Table Testing of a Balsa Building Under Simulated Earthquake Ground Motions

Husam Najm
(Civil and Environmental Engineering)

Are you intrigued by earthquakes? Are you curious about learning why some buildings collapse during an earthquake while others don’t? In this seminar, we will learn about earthquakes and earthquake engineering, their history, their effect on buildings and bridges, and on human life. We will explore the basics of structural engineering, structural materials that can best resist earthquake shaking, and what factors contribute to a safe design of buildings in seismic zones. This seminar/project will include three activities: 1) designing and constructing a 6-story building structure made of balsa wood to resist ground shaking. The structure will be about 5 ft high and will be placed on a 18inx18in shaker that will shake the structure simulating an earthquake event; 2) testing the balsa structure under various earthquake motions generated by the shaker; and 3) recording the roof accelerations of each structure and comparing the performance of the structures.

Hunger Frames
Chris Gunning
(New Jersey Institute for Food, Nutrition, and Health; Rutgers Health Services)

Peggy Policastro
(New Jersey Institute for Food, Nutrition, and Health Services)

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 class explores recent research showing that re-designing 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, Harvest Cafe, Henry’s Diner) to discuss recent studies and observe our dining environments. This seminar 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 7 meal swipes for this course.

Global Environmental Health
Mark Robson
(Plant Biology)

There are almost eight billion people in the world today and the population will grow to close to ten billion by 2050. Almost eighty five percent of the population live in developing countries. One of the challenges for this ever-growing population is providing a secure food supply. We will discuss the trends in global food production and the technology used to increase global food supply. We will also explore the ever-growing global obesity epidemic. While there are 300 million undernourished people in the world there is a larger number of people, close to 14 billion, who are overweight. Finally, we will look at the overall health of the global population, their jobs, their lifestyle, and the relationship to global environmental health issues, in particular those dealing with problems such as water and air pollution, food production and safety, and infectious and occupational diseases. Professor Robson will share experiences from developing countries in their lifestyle, and the relationship to global environmental health issues.

Origins of Life, Meaning and the Universe
Stephen S. Schneider
(Physics and Astronomy)

This seminar will be on the nature of reality as described by modern physics and its relation to the concept of reality that we use in our everyday lives. The primary text will be The Big Picture: On the Origins of Life, Meaning and the Universe itself by Sean Carroll. We will also discuss writings by Lenny Susskind, Roger Penrose, Steven Weinberg, David Deutsch and others. The seminar will be wide ranging, touching on fundamental physics, cosmology, the origin and evolution of life, quantum information and consciousness. The focus will be on what we know and how we know it. The discussions will be serious but a math background is not required.

Introduction to Chaos and Pattern Formation
Troy Shinbrot
(Biomedical Engineering)

This seminar will discuss several examples of chaos and pattern formation from physics, chemistry, and biology. We will explore examples such as the dripping faucet—which we will show undergoes a transition to periodic, at low water flow, to period doubling to chaotic as the flow rate increases. We will discuss the history of the field starting with Poincaré’s revelation that planetary orbits in the solar system are not stable, leading through Lorenz’s discovery that models for the weather exhibit strange attractors, and culminating in modern studies that reveal chaos and pattern formation in the heart. The seminar will be example-oriented, using simple models that only require elementary algebra.

Interactive Engineering Education Modules to Democratize Research Opportunities Via Gamification
Jonathan Singer
(Mechanical and Aerospace Engineering)

Research experience is universally recognized as the superlative means of science education, but it is also the most costly. This seminar offers students the opportunity to participate in a pilot virtual research course (VRC) module. The VRG module simulates a complex materials science challenge through gamifying the research process. Students will acquire advanced analysis techniques to synthesize various forms of data in a holistic fashion, then employ these skills to allocate limited virtual resources towards solving the problem at hand—a process generally reserved for graduate-level study. Through their participation and feedback, students will be integral to developing the VRG module, and their results will build a tool to enable investigation-based education in environments lacking the capabilities of a major research institution.

Food for the Twenty-First Century: Can We Feed 11 Billion People?
Paul Takhistov
(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 2100. Can we produce enough food for all people sustainably and can we afford it? With modern science and technologies, the food industry has gained a wide 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 develop new food formulations using new food materials and technologies, such as edible films, 3D printing, and more.

Metabolism: From Lavoisier to Metabolomics
Malcolm Walford
(Nutritional Sciences)

How often have you heard the statement “I am fat because I have a slow metabolism?” In this seminar 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 changing 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 cure for obesity (that wasn’t); the Warburg effect in Cancer cells; Treatment of diabetes by gene therapy to change metabolism. The answer to the opening question posed here? A slow metabolism is not the cause of obesity, the evidence for which will be discussed in class.

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 examining concerns about the desalination of seawater 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 field trip to the Rattles River and/or a field trip to a local water processing plant.
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.

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