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

HAVE QUESTIONS?

Email: byrneseminars@rutgers.edu / Call 848.932.6971
Or visit our website: WWW.BYRNE.RUTGERS.EDU

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? As first-year students at Rutgers University–New Brunswick, Byrne Seminars provide a window into the vast array of academic disciplines available to you. Rutgers is proud to house the Byrne Seminar Program thanks to the generous support of the Byrne family. This program offers you a unique opportunity to work closely with faculty members and potential mentors at the start of your time at Rutgers, to meet and develop close friendships with peers sharing similar interests, and to delve into intellectual areas that could spark your enthusiasm for future academic pursuits.

Leafing through the pages of this catalogue, you will see the breadth and scope of the Byrne course offerings. Some of the featured seminars this semester include: “American Roots Music,” which traces the history of a variety of popular musical genres; “Is There Life on Mars?,” which explores the prospects of life in the universe beyond our own planet; and “Black Boxes and Black Hats,” which examines the promises and perils of artificial intelligence.

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

Christopher J. Molloy
Interim Chancellor, Rutgers University–New Brunswick
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-Jauregui
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
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. 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.

11:090:101 section 01 index 11010

**Addiction**

*Mark West (Psychology)*

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

01:090:101 section 69 index 09813
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, Global Public Health Concentration; Urban-Global Public Health; Environmental and Occupational 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 on the communicable diseases. 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 TB persists worldwide. We will review the underlying infection with *Mycobacterium tuberculosis* (*M.tb*), the responses of the body’s defense system to the infection, diagnosis, treatment and prevention of TB, drug resistance, the lack of drug options and difficulties to access drugs and the efficiency of health systems in low and middle income countries. We will discuss the social determinants underlying the *M.tb* infection and TB 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.

01:090:101 section 96 index 12424

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**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 small set of original poems. The seminar will introduce students to the practice of research in both the humanities and the natural sciences and will have special appeal for those whose interests span both areas, although no familiarity with astronomy or writing poetry is required.

01:090:101 section 05 index 08761
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.

01:090:101 section 11 index 08763

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, James Brown, Led Zeppelin, Michael Jackson, Madonna, Public Enemy, Beastie Boys, Bjork, Radiohead, Danger Mouse, Lady Gaga, and Bruno Mars. We will also watch musically intertextual films such as The Rocky Horror Picture Show, This is Spinal Tap!, and The Royal Tenenbaums.

01:090:101 section 06 index 16331

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 seminar will assist you in learning how the practice of yoga can support a happy and healthy life. Through centering and breathing techniques, strengthening and stretching yoga postures, and simple meditations, students will begin to gain a better sense of well-being. We will investigate mindfulness trainings and yoga sequences throughout the ten-week seminar.

01:090:101 section AE index 12567

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.

01:090:101 section 24 index 06844

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 16 index 12410
The “Problem of Evil” in Philosophy, Literature, and Film
Trip McCrossin (Philosophy)
What do we mean when we say of someone that they have “the patience of Job,” when we complain that “bad things happen to good people,” and “good things to bad,” when we admit that we are somehow consigned in our distress by the assurance that “things always work out for the best?” What such sayings, complaints, and consolations share, among other things, is that they reflect together, the ongoing legacy of the problem known as “the problem of evil.” In this seminar, we will work together to understand a basic divide that has animated modern responses to the problem, as both a theological and secular one, and to trace the legacy of this divide in certain exemplary contributions to twentieth-century literature and film.

Looking East: A Different Way of Learning Dance, Language, Traditional Arts and Cultures through Movement
Paul Ocampo (Dance)
This seminar will investigate various dances and traditional arts and culture of Taiwan, the Philippines, and neighboring countries. Through the language of dance, students will learn traditional arts and cultures associated with respective festivities. The food serves as a conduit for a holistic experience to deeper comprehension of Asian cultural 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 an expression of social order. Along with the practice of dance, we will experience how to prepare traditional foods associated with respective festivities. This seminar will include a field trip to New York City.

The Politics of The Great Gatsby: How to Read Fitzgerald’s Novel Like a Political Scientist
Bryan Adams (Assistant Director, Rutgers Office of Veteran and Military Programs and Services)
Scott Ordway (Music)
Saladin Ambar (Eagleton Institute of Politics)
The Great Gatsby, nearly 95 years old, remains one of the greatest of American novels. Part of what makes it so compelling is that it is a wonderful repository of American political thought—thought reflected in the history, language, and rich characters found in Fitzgerald’s unforgettable book. This seminar will engage in a close reading of The Great Gatsby through the lens of American political history and with unapologetic awareness of the politics of the present moment. In addition to the novel, we will read short essays and related pieces to Gatsby, taking into account critical themes such as class, gender, race, and sexuality. Students will be asked to reflect upon what makes the novel so enduring—and how it speaks to the state of our politics today.

Music and Landscape
Scott Ordway (Music)
The natural world has always been a primary source of inspiration for musicians. In recent years, composers have continued this tradition by creating powerful works in response to contemporary environmental issues such as global warming, carbon emissions, and wilderness conservation. In this seminar, which is led by an award-winning composer and conductor, students will listen to and discuss classical and contemporary vocal and instrumental works that address and celebrate humanity’s efforts to live in harmony with the natural world. In addition to short readings, assignments will include listening, writing, and a mentored field recording project in New Brunswick. Prior musical experience is required.

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 art, dramatic situations, and architectural design, among others. The seminar includes a field trip to a performance in New York City.

Green Zone: Military Cultural Competency Training
Bryan Adams (Assistant Director, Rutgers Office of Veteran and Military Programs and Services)
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 that 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.
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, 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 has 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.

01:090:101 section 02 index 15887

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 consider the substantial role that psychology can have in school settings.

01:090:101 section 26 index 11001

Truth or Fiction?
Leslin Charles (Rutgers Libraries)

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

01:090:101 section 98 index 12423

Golf As An aid to Your Career—Networking on the Links
Richard L. Edwards (Chancellor Emeritus and University Professor)
Lisa Jensen (PGA Professional/Rutgers Golf Course Manager)
Kate Sweeney (Senior Vice President and Financial Advisor, Morgan Stanley)

This seminar considers how understanding and being an athlete can enhance your career development through fostering important “networking” opportunities. We will consider the history of the game of golf and how it can play a role in your personal and career life, both as a recreational activity, as a way to deal with stress, and as an important asset to your career, whether you work in the corporate or nonprofit sector. We will explore how for-profit corporations use golf for marketing and public relations purposes and how nonprofit organizations use golf for fundraising purposes. The seminar will include discussions with corporate executives, as well as two complimentary group golf lessons for the class. Whether you already play golf or you have never swung a golf club, you are welcome to participate in this seminar. Both men and women will benefit from this seminar.

01:090:101 section 07 index 08762

So You Want to Change the World? Learn to Serve, Serve to Learn
Maurice J. Elias (Psychology)

Many young people today have a desire to make positive change in the world, yet are deeply suspicious of conventional politics. Some are cynical and comment from the sidelines; others perform service activities aimed at helping communities in what they perceive as a direct, meaningful way. Is this a “band-aid” approach, or an alternate form of politics? This seminar will examine the concept of service politics, the intersection of direct service and civic engagement through established democratic mechanisms, and the role of an engaged university in preparing students for civic life. We are going to understand the psychology of change, leadership, and service by looking at research and theory and our own experiences and those of loved ones and others, all through the lens of the unique political moment in which we are living.

01:090:101 section 08 index 15892

Energy in History and Culture
David Hughes (Anthropology)

Energy is everywhere. Unfortunately, the modern obsession with fuel and its uses have caused us to lose sight of its ubiquity and plenitude. This seminar will follow energy—and the consciousness of energy—across the landscape and through history. Breezes, for example, powered transportation long before wind turbines began generating electricity. In crossing oceans, sustainability began with sail. Selected from major texts, modest readings will range from Rick Bass’s Oil Notes to Richard Wrangham’s Catching Fire: How Cooking Made Us Human. Ultimately, students will be emboldened to appropriate energy in everything from growing plants to clotheslines—and to insist that broader society do the same.

01:090:101 section 38 index 15896

The Transformation of New Brunswick: Past, Present, and Future
James W. Hughes (Planning and Public Policy)
David Listokin (Planning and Public Policy)

This seminar will examine the historic rise, decline, and revitalization of New Brunswick from its colonial origins to the present in the context of the economic and demographic changes that were taking place in New Jersey and the nation. The roles of Rutgers and Johnson & Johnson in the decision-making and planning processes that led to the city’s resurgence will be detailed. The lessons (both positive and negative) for urban America will be examined, concluding with discussions of the future of the city as the third decade of the twenty-first century approaches.

01:090:101 section 40 index 15897
Politics 2019: Measuring the Challenges and Achievements of the “Year of the Woman”
Ruth B. Mandel (Director, Eagleton Institute of Politics; Senior Scholar, Center for American Women and Politics)
Debbie Walsh (Director, Center for American Women and Politics)

It’s January 2019. Long awaited results are in from the interminably anticipated 2018 mid-term elections. Winning candidates have taken an oath of office and been sworn in as newly elected officials in Washington, D.C. and in state and local jurisdictions across the country. What is the political women’s national report card—the chief accomplishments and disappointments of the 2018 elections? What is the profile of women’s political leadership at the beginning of 2019? Do 2019 and 2020 look like good years for advancing women’s political power? This seminar will explore the modern women’s political movement and take a deep dive into the results of women’s recent political behavior. What happened in election year 2018? We will examine women’s behavior as voters, candidates, and activists during a so-called “Year of the Woman.” Students will hear from a series of guest speakers who were directly involved in the 2018 campaigns and who are now looking ahead to the road for political women in 2020 and beyond.

01:090:101 section 42 index 05190

Knowledge, Language, and Cognition
Alexander Puchign (German Language and Culture Studies)

What is the nature of knowledge? What is language? How are they connected? Does our knowledge control our language or does our language determine how we think and what we know? These and many other questions will be addressed in this Byrne seminar, which is designed to engage students in a discussion focusing on the connections between philosophy, culture, and linguistics. The seminar will include an exploration of some general theoretical questions about the nature of language, including questions of what language is, how it relates to cognition, and how it is acquired by children and adults. We will examine Saussure’s structural approach to language, Skinner’s behaviorist theory, and Chomsky’s Universal Grammar, as well as discuss some linguistic universals and cultural phenomena connected to language and knowledge.

01:090:101 section 36 index 14447

Fundraising for International Causes: Effectively Utilizing Crowdsourcing and Other Social Media for Global Causes
Ronald Quincy (School of Social Work)

In this seminar, we will examine the challenges that nonprofit organizations encounter to amass the assets and resources needed to manage their charitable and public services. Traditional and nontraditional fundraising methods will be discussed, along with marketing principles. You will learn the art and science of “asking” for money, inside tips on successful grantmanship, and how to write winning funding proposals. The seminar will focus on “how to land the big fish.” Readings and discussions will be drawn from newsletters, journals, writings of top fundraisers, and “best practices” scholarship in this field of study. Following the course, students will be able to write grant proposals, and enhance their techniques on how to “ask” for funding.

01:090:101 section 52 index 08949

Jerseyana: History, Culture, Music, Movies, Highways and Bi-Ways of the Garden State
Michael Rockland (American Studies)

New Jersey is often put down, (especially by the cities that boomed it, New York and Philadelphia, which sometimes describe N.J. as “a cultural wasteland”). So does Saturday Night Live and the Woody Allen movies. Are they jealous? Despite the famous, Jersey окie, the state has a rich cultural history. Just in entertainment, Frank Sinatra, Meryl Streep, Jack Nicholson, Count Basie, Bruce Springsteen, Susan Sarandon, and Jon Bon Jovi all hail from New Jersey. So does “The Sopranos,” and some of the finest movies. And there’s a reason Thomas Edison made all his great inventions here. New Jersey has a certain vitality that engenders creativity. Although I have written four books on New Jersey and also acted in a New Jersey oriented movie that we will screen, this is going to be a participatory course, because you know a great deal about the subject already if you are from New Jersey or even from out-of-state studying here. You may be more expert on the subject than I am or certainly will bring a fresh perspective. So I’m not going to lecture, instead, we’re going to have spirited debates. Get ready!

01:090:101 section 34 index 15994

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 knowledge of how friendship is represented in literary and cinematic traditions besides Japan’s.

01:090:101 section 78 index 16972

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 living, loving, and expressing. This seminar uses film portrayal of sexual diversity as cultural 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 “closeted” 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.

01:090:101 section 60 index 09636

Secrecy and Privacy in an Age of Transparency
Craig Scott (Communication)

There is little doubt that we live in an era where demands for transparency and openness are increasingly common. But these ideals often stand at odds with needs for secrecy and rights to privacy as individuals and organizations struggle to manage their visibility to others. The secrecy that exists in our most trusted institutions and among the closest of friends can represent cherished possessions and be used to protect people from those who might bring them harm; but secrecy and the revelation of those secrets can also be used to inflict great damage on societies and various relationships. In a similar way, the preservation of privacy has become a fundamental, global debate as we increasingly disclose information to others for the sake of convenience or social networking—often without knowing who might have access to those disclosures and how that information might be used. This seminar will introduce students to some of the communication-based challenges surrounding issues of secrecy (e.g., public secrets, secrecy in relationships, secret societies, proprietary secrets, top secret classifications), and privacy (e.g., privacy law, privacy boundary management, surveillance/cybertagging, big data, privacy/literacy) with an eye towards better understanding and more appropriately managing one’s visibility in this age where so much is made transparent.

01:090:101 section 65 index 15919

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 inequality—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 valuation of information technology in the West makes it easy to overlook the persistence of vast areas of information poverty in the world. This global digital divide of access to technology and information continues to threaten human rights, development goals, and political stability. Information also has a private and personal value. We will examine case studies of how governments and corporations quantify information and what this means about our own information “worth.” In addition to class discussions, we will develop information literacy skills and use scholarly resources available through the Rutgers University Library to explore these topics. The seminar will culminate in a research proposal on an issue related to information inequality and its effects on local and global communities.

01:090:101 section 82 index 16863

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.

01:090:101 section 76 index 10053
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, diseases of some which never existed before. At the same time, life and physical sciences are getting much better at understanding how we function. Why we get sick, and how, 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 “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

Biography of Women

Joan Bennett (Plant Biology and Pathology; Associate Vice President for Promotion of Women in Science, Engineering, and Mathematics)
The language describing human anatomy and physiology was largely written by men. Perhaps for this reason, much of the medical jargon describing women’s biology can be misleading or have negative connotations. This course will give a basic overview of women’s biology and will cover male and female reproductive anatomy, the menstrual cycle and menopause, birth control, pregnancy, labor and delivery, childbirth, anesthesia, lactation, sex determination, and diseases of the reproductive system. The class is meant to be a non-technical introduction to obstetrics and gynecology, with commentary of changes that have occurred in recent years. Demonstration materials will be used in each class session.

11:090:101 section 02 index 11011

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?

01:090:101 section 01 index 12274

01:090:101 section 09 index 21113

This is Your Brain on Learning

Kasia Bleszczad (Psychology)
This seminar will highlight the many ways that the brain changes itself. The technical theme is “neuroplasticity.” 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 levels 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 2019-19 theme of “Methodologies” by showing how novel neuroscience techniques and analyses were key to discoveries of neurolplasticity in synapses, circuits, systems, and molecules.

01:090:101 section 004 index 15888

Medicinal Plants: The Essence of Diversity

Mary 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. Pharmacognosy, a branch of medical science devoted to drug plant history, selection, identification, and study, remains an alive and flourishing area of research in our modern 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.

11:090:101 section 24 index 12521

Poisons and Poisoning: The History and Toxicology of the World’s Most Dangerous “Medicines”

Patrick Bridgeman (Pharmacy Practice and Administration)
Poisons and poisoning have been involved in some of the most influential events in history, from the death of Socrates through the high-profile assassination of Kim Jong-Nam. The objective of this seminar is to introduce students to the clinical effects and basic toxicology of the most infamous poisons used throughout history. Poisons play an infamous role in the politics and culture of the world even in present times. The intent of this seminar is to introduce students to the roles of poisons throughout history; describe the legitimate medical use of some poisons and how they affect current medical treatments; introduce the cultural and political aspects of poisons and poisoning; describe the toxicology of poisons; and to recognize poison research happening at Rutgers University.

01:090:101 section 03 index 10998

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.

01:090:101 section 50 index 21118

Life on Earth, Mars, and Beyond

Kat Dawson (Environmental Science)
Nathan Yee (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.

11:090:101 section 03 index 19915

Cognitive Science Goes to the Movies

Jacob Feldman (Psychology)
Karin Stromswold (Psychology)
Movies are a virtual laboratory of cognitive science, from the perceptual functions that make them possible (apparent motion, the perception of 3D form) to the thematic content of the movies themselves (memory, language, and the cognitive and neurological disorders as featured in many films). This seminar explores a variety of topics in cognitive science as illustrated by a selection of popular movies which students will watch. Examples include short-term memory (as illustrated in the movie Memento), long-term memory (Eternal Sunshine of the Spotless Mind), dementia (300 Sallye), language disorders (Lifefant Savages), philosophical conundrums of artificial intelligence (Blade Runner), and the epistemology of perception (The Matrix). Through viewing and directed discussions of these movies, the seminar will introduce students to the cognitive and perceptual functions that allow viewers to comprehend the action on the screen as well as the psychological functions and dysfunctions the movies depict.

01:090:101 section 12 index 15893

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.
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 how 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.

11:00/101 section 04 Index 20360

The Fine Art and Science of Polyniography
Bahman Kalantari (Computer Science)

Through a unique software, called Polyniography, you will be introduced to a fantastic, very powerful, and easy to use artistic visualization medium, where polynomials turn into 2D images that can be used to create artworks of diverse types, invent games, and discover many new concepts as well as creative and innovative ideas that can be applied to many subject areas. Students of Polyniography 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 Polyniography software is similar to learning to work with a sophisticated camera: one needs to learn the basics of, of course, but the rest is up to the photographer. (See www.polyniography.com or Polyniography on Facebook for more information).

11:00/101 section 59 index 16149

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 this era’s pioneers, including Artie Adriaen, Bugsman Prandtl, Tupolev and many others. The crucial role of the development of turboram and turboprop propulsion systems will be reviewed, as well as the European, Soviet and American (now Russian Federation) airplane aircraft will be considered. The seminar will conclude with a visit to the Smithsonian Air and Space Museum in Washington, D.C.

11:00/101 section 68 Index 14686

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” held 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 box” devices (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 hold 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 easy and independently tested and verified.

11:00/101 section 31 index 06845

The Psychophysiology of Stress Management: How To Do It and Why It Works
Paul Lehrer (Psychiatry)

Students will be given an introduction to psychophysiological aspects of stress, and will learn a number of well-validated techniques for managing stress more effectively in their own lives. They will get an introduction to the autonomic nervous system, how the sympathetic and parasympathetic systems are regulated, how they are affected by stress, and how stress management techniques can help regulate the body. Topics will include an introduction to homeostasis and allostatic, deep muscle relaxation, hypnosis and self-hypnosis, mindfulness, and cognitive restructuring. Students will learn to use each of these approaches in their own lives. They will take daily data on their own experiences in managing stress, and will write a short paper on stress management based on their own data.

11:00/101 section 35 index 15895

Exploring the Deep Sea
Richard Lutz (Marine and Coastal Sciences)
Costantino Vetrini (Biochemistry and Microbiology)

The seminar will focus on past and present research conducted by Rutgers faculty and students. Those who have been at sea forefront of exploration of a wide spectrum of deep-sea environments throughout the world oceans. The seminar will expose students to ecological and microbiological research conducted in the most extreme environments on the face of the planet. The capabilities of cold-seep habitats to harbor diverse hydrothermal vents with temperatures in excess of 70°F (30°C) located at depths of 1 - 2 miles beneath the ocean surface, as well as ongoing research at Rutgers aimed at discovery of chemical compounds isolated from deep-sea vent organisms that may have pharmaceutical potential for curing certain types of cancer. Hands-on activities will include interactive exchanges between students and the professors focused on historical videos dating back to the initial biological expedition to deep-sea vents in 1979, and include an IMAX film entitled “Volcanoes of the Deep Sea” that was co-produced by Rutgers University featuring Rutgers scientists and research efforts.

11:00/101 section 10 Index 16156

Paperbotics and Art
Aaron Mazzeo (Mechanical and Aerospace Engineering)

Pulse-based paper has conveyed information with printed lettering, diagrams, and illustrations for hundreds of years. In these conventional formats, the flipping or turning of pages has required human manipulation. Recent research efforts are beginning to shed light and active functionality to paper-based structures in the form of mechanical grippers, manipulators, and locomotors. In this hands-on seminar, students will review state-of-the-art research in paper-based robotics (i.e., paperbots) and active origami, and then exercise creativity to build paper-based machines that will be capable of motion and interaction with humans. By also planning the aesthetics of their projects, participants in this seminar will go beyond building gadgets to craft functional pieces of art.

11:00/101 section 49 index 12412

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, risks related to water contamination, and changes in groundwater resources. Hands-on assignments will include learning about the sources of water in students’ hometowns, how the water is obtained and processed, and what local companies are doing to address climate change. This seminar may include a field trip to the Raritan River and/or a field trip to a local water processing plant.

11:00/101 section 11 index 16157

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; 2) testing the structure; and 3) recording the acceleration of each structure and comparing the performance of the structures.

11:00/101 section 67 index 19914
Can the framing of a situation affect what you eat? What types of foods are being consumed, and how does this affect health outcomes? These questions will be explored in the seminar on Hunger Frames. Chris Gunning (New Jersey Institute for Food, Nutrition, and Health; Rutgers Health Services) and Peggy Policastro (New Jersey Institute for Food, Nutrition, and Health; Dining Services) will discuss recent studies and observe our dining environments to promote healthier eating. We will meet each week at a different dining setting to experience the impact of different environments on food choices.

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 undernourished people in the world, there are 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.

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

In this seminar, we 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 group (VRG) module. The VRG simulates investigation of 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 modules, and their results will build a tool to enable investigation-based education in environments lacking the capabilities of a major research institution.

Origins of Life, Meaning and the Universe
Stephen Schnetzer (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.

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 whole new set of tools to improve certain properties of food and associated processes that are necessary for food production. However, food production should never come at the expense of human health. In this seminar, we will discuss principles of the food supply chain, the modern approaches to design food products, and the ways to create a sustainable food future. We will also discuss applicability of new sustainable sources of food such as algae, insects and biologically derived polysaccharides as food supplements. During the course, students will have an opportunity to prepare some formulations using new food materials and technologies, such as edible films, 3D printing, and more.

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

How often have you heard the statement “I am fat because I have a slow metabolism”? In this 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 changed in conditions such as obesity, diabetes, and cancer, and how understanding such changes may lead to innovative treatments. Each topic will begin with some historical details, but the main part of our discussions will focus on the potential of individualized medicine and nutrition to maintain a healthy metabolism. Topics will include: Brown Fat, the fat that makes you thin; Leptin, the cure for obesity (that wasn’t); the Warburg effect in Cancer cells; and treatment of diabetes by gene therapy to change metabolism. The answer to the opening question posed here? A slow metabolism is not the cause of obesity, the evidence for which will be discussed in class.

Sufficiency Engineering: Food Security and Sustainability
Karmi Bass (Food Science)

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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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