

Newly Added Gen Ed courses for Fall 2019

Department	Course Number	Course Name	Gen Ed Category	Course description
Biological Sciences	03-118	Beer: A Yeast's Perspective	Modeling / Natural Sciences	This is a combined lecture and laboratory course in which students will investigate the biochemistry of fermentation using strains of yeast commonly used in brewing science. Lectures and readings will cover all necessary information to succeed in the course, including topics like yeast metabolism, fermentation at the micro and industrial levels, and a history of fermentations influence on society. Lab experiments will investigate yeast growth and fermentation processes in various strains used in brewing, and quantitative assessments of beer at the molecular level. The course puts a focus on microbiology lab techniques and yeast biochemistry; however, no previous lab experience or biology coursework is required, and anyone with an interest in the science behind brewing yeast can succeed in the class.
Biological Sciences	03-120	Germs: The Good, the Bad, & The Ugly	Modeling / Natural Sciences	The Good, The Bad, and The Ugly Bacteria are a scourge to humankind, causing life-threatening infections like tuberculosis, meningitis, and pneumonia to the less severe ear infections and strep throats that plague many childhoods. On the other hand, the healthy human microbiota is a community of microorganisms dominated by trillions of bacteria that reside everywhere from our skin to nasal passages and gut. This virtual organ is estimated to weigh as much as the human brain and contributes to essential bodily functions like food metabolism and defense against infection, while also impacting memory, anxiety, and depression. Changes in the gut microbiota are also associated with diseases including autism, obesity, allergies, and inflammatory bowel disease. Why the incidence of these chronic diseases is increasing is unclear, but it may be the result of excessive antibiotic use, dietary changes that harm our gut microbes, or both. This century will be marked by both the challenge of antibiotic resistant infectious bad bacteria, and the possibilities to harness good bacteria to promote human health. In this course, we explore how bacteria make you healthy and what we can do to nurture our microbiota, and how bacteria make you sick and what we can do to stop them.
Biological Sciences	03-128	Environmental Science	Modeling / Natural Sciences	Environmental science is a highly interdisciplinary field that integrates knowledge and modes of inquiry from across the sciences to understand some of the most important challenges of 21st century. This course provides a foundational background in scientific method, critical thinking and problem solving strategies used to study and evaluate the environment. Modules include, principles of ecology and eco-systems, biological diversity, biogeochemical cycles, endangered species management, human population growth, atmosphere, climate and global warming. Assessment will include class attendance, quizzes, individual and small group projects, in class exams. Projects may involve visits to local sites.
Biological Sciences	03-135	Structure and Function of the Human Body	Modeling / Natural Sciences	Structure and Function of the Human Body is a non-majors course designed to explore fundamental relationships between form and function of the human body. The anatomy and physiology of major organ systems will be studied in the context of normal and disease states. Because no prerequisite knowledge is required, students will learn about critical biological processes such as the central dogma, membrane diffusion and transport, cell signaling, gas exchange, blood flow, nutrient absorption, blood pH balance, and action potential generation and propagation. Students will then apply this knowledge to understand how organs respond to various inputs in maintaining homeostasis. Hands-on demonstrations will be incorporated to provide a practical framework for the information presented in lectures. At the culmination of the semester, students will gain a broad understanding of how the body systems function at the cellular, tissue and organ levels and be able to relate simple physiological processes to better understand highly prevalent diseases in society.

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Chemistry	09-403	Chemistry of Addiction	Modeling / Natural Sciences	What makes us need something so much that it eclipses other important aspects of our lives, such as family, friends, work, hobbies, health and wellness? There are many different types of addiction; this course will focus on molecular addictions, specifically those involving members of the opiate class of narcotics. The ongoing epidemic of opiate addiction, arising both from over-prescription of pain killers and recreational use of heroin, has been widely reported and continues to rise at alarming rates, ravaging our urban and rural communities. In this course, we will explore the complicated role of chemistry in this epidemic, including the good (elucidating mechanisms of action, development of clinically useful and safe opiates and non-opiate pain killers) and the bad (design and synthesis of increasingly addictive opiates). We will also discuss ethical questions faced by the pharmaceutical industry that develops, markets and sells opiates, the medical community that prescribes opiates, and the government agencies charged with regulating these activities. Students who complete this course will emerge with a broad understanding and perspective on an issue that is of great scientific and societal importance. 3 hrs. lec.
Economics	73-427	Sustainability, Energy, and Environmental Economics	Deciding	Topics related to sustainability and the environment are increasingly important to businesses, policymakers, and the general public. This course applies the tools of economic analysis to the problems of environmental protection, natural resource management, and energy production and use. The course will begin by introducing students to how an economist approaches problems of market failure commonly found in environmental contexts. Next, we will explore models that characterize solutions to such environmental issues. We will then address questions regarding measurement, policy design, and, finally, we will apply the tools that we have developed during the semester to the problems of climate change, and the optimal management of non-renewable resources. (Lecture, 3 hours). Minimum grade of C required in all economics pre-requisite courses.
English	76-210	Banned Books	Reflecting	Freedom of expression enjoys an almost sacrosanct position in American politics, and yet there have been repeated attempts in the past century to ban, burn, censor, and suppress a number of controversial books. Students in this course will learn about the historic, institutional, and social contexts in which these censorship controversies arise, as well as the ways in which artists have responded to censorship attempts. We will ask which kinds of work are typically challenged and how attempts at censorship affect our understanding of a banned text and its significance. Readings for this class will include novels such as Toni Morrisons <i>The Bluest Eye</i> , Kurt Vonneguts <i>Slaughterhouse Five</i> , Judy Blumes <i>Are You There God? Its Me</i> , Margaret, Stephen Chobskys <i>The Perks of Being a Wallflower</i> , Sherman Alexies <i>The Absolutely True Diary of a Part-Time Indian</i> , and Alison Bechdels <i>Fun Home: A Family Tragicomedy</i> . In addition to literature, we will also consider the ways in which other forms of art, such as movies and music, have been challenged and censored. Students in this course will also celebrate the American Library Associations Banned Books Week, which will take place September 22-28.
English	76-218	Special Topics: Medieval Romance & Arthurian Legends	Reflecting	This course will explore the greatest hits of medieval literature from early Arthurian legend to the most popular of the <i>Canterbury Tales</i> . We will read famous medieval romances from Chaucers <i>Troilus and Crysede</i> to Gottfried von Strassburgs <i>Tristan</i> , and the timeless letters of Abelard and Heloise. We will compare and contrast these texts across time, place, space, genre, and form, discussing medieval cultural values of chivalry, nobility, honor, quest, charity, and fealty. Students will be expected to write short responses, one close reading paper, and a comparative paper by the end of the term.

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English	76-230	Literature & Culture in the 19th C.: Environmentalism	Reflecting	In this class we'll go back in time to the Walden Pond of Thoreaus time, with a focus on the Green Nineteen---writers and thinkers who considered the relationship between human civilization and the wilderness (Mary Shelley's Frankenstein, Thoreaus Walden Pond, and selected essays from Ralph Waldo Emerson). We will also think about the environment in relation to a famous slave narrative (Douglass, The Slave Narrative of Frederick Douglass) and in relation to one of the great feminist novels of the time, The Awakening. Finally we will consider the environmental consciousness of the two most important poets of the 19th century, Walt Whitman and Emily Dickinson. As for coursework, we will use the class to practice meditation, nature walks, and one project in which you will design your own environmentally conscious Utopian community.
English	76-275	Critical Writing Workshop	Communicating	This course will introduce you to ways of critical thinking and writing about literary and media genres: poetry, drama, fiction and film. Authors may include William Blake, Percy Shelley, Jane Austen, Herman Melville, Emily Dickinson, H. G. Wells, Charlotte Perkins Gilman, T. S. Eliot, Toni Morrison, Tom Stoppard, or Don DeLillo. Film directors may include Sergei Eisenstein, Orson Welles, Alfred Hitchcock, Jean-Luc Godard, or others. Students will learn how to interpret print and visual media and how to communicate their interpretations with clarity and self-awareness. To that end, students will write four short to mid-length interpretive papers to workshop in class.
History	79-266	Russian History and Revolutionary Socialism,	Reflecting	This course covers an epic set of events in Russian history from the emancipation of the serfs in 1861 to the death of Stalin in 1953. Spanning almost a century of upheaval and transformation, it examines what happened when workers and peasants tried to build a new society built on social justice and economic equality. Learn about Lenin, Trotsky, Stalin, and other revolutionary thinkers and dreamers. The course surveys the revolutions in 1917, the Civil War and the Red victory, the ruthless power struggles of the 1920s, the triumph of Stalin, the costly industrialization and collectivization drives, the Great Terror, and the battle against fascism in World War II. It ends with the death of Stalin, and the beginning of a new era of reform.
History	79-300	Guns in American History: Culture, Violence, and Politics	Reflecting	This course will describe and analyze aspects of the development of law and public policy related to guns in the United States from the colonial era to the present. Students will be expected to synthesize perspectives from social history, ethnography, public health, criminology, policy analysis, and legal scholarship. They will also engage the critical examination of popular culture and media representations of gun cultures and gun violence. Particular emphasis will be placed on changing views about the authority of the government to intervene in the production and ownership of guns, as well as the best way to balance individual and collective interests in a pluralistic society. Assignments may include reading quizzes, in-class debates, policy position papers, and film/documentary reviews.

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IPS	84-364	Comparative Presidential Behavior: Leadership, Personality, and Decision Making	Deciding	Presidents receive universal attention for good reasons. As the most powerful politicians in the 49 countries that they govern, their behavior and decisions have enormous consequences. Given the vast amounts of energy dedicated to understanding presidents, one would expect that many questions about presidential behavior and performance have been answered. However, there is still little understanding of how presidents matter. In this course we address the pressing question of how presidents matter from a multidisciplinary and comparative perspective. We will mainly incorporate insights from political science and psychology, but also from other disciplines that study leadership (e.g., management and history). In the first section we will discuss the comparative history, evolution, and characteristics of the presidency, examining cross-country variation of presidential powers and roles. In the second part, we will discuss theories that have addressed the role of political leaders from different disciplines and methodological approaches. In the third (and main) section, we will study the personal presidency, or how the unique background of the leaders and their personality traits are related to relevant political outcomes. In the last section, we will examine how the broader social, political, and economic context explains presidential behavior and performance.
IPS	84-369	Decision Science for International Relations	Deciding	Decision Science looks at choices from three interrelated perspectives: analysis, characterizing decision makers options, in terms of expected effects on outcomes that they value; description, characterizing decision makers beliefs and preferences; and interventions, helping decision makers to choose among the options available to them or create better ones. The course integrates foundational research in Decision Science with applications to international relations and politics.
IPS	84-370	Global Nuclear Politics	Deciding	The taming of the atom is one of the defining features of the modern era. The awesome creative and destructive potential of nuclear energy has had enormous impact on great power politics, the environment, economic development, and international institutions. Limiting the risk of nuclear Armageddon is one of the dominant challenges in US foreign policy and global governance alike. In this course, we will study 1) why and how countries pursue nuclear weapons and what happens when they acquire them; 2) the national policies and international regimes that have been devised to curb their spread and use, while allowing for the diffusion of energy technology, 3) the national and transnational civil society movements that have fought to roll back the nuclear age or limit its harmful effects, and 4) the role of private actors such as scientists and corporations.
Mathematical Sciences	21-260	Differential Equations	Modelling / Mathematics	Ordinary differential equations: first and second order equations, applications, Laplace transforms; partial differential equations: partial derivatives, separation of variables, Fourier series; systems of ordinary differential equations; applications. 21-259 or 21-268 or 21-269 are recommended.
Mathematical Sciences	21-268	Multidimensional Calculus	Modelling / Mathematics	A serious introduction to multidimensional calculus that makes use of matrices and linear transformation. Results will be stated carefully and rigorously. Students will be expected to write some proofs; however, some of the deeper results will be presented without proofs. Topics to be covered include: functions of several variables, regions and domains, limits and continuity, partial derivatives, linearization and Jacobian matrices, chain rules, inverse and implicit functions, geometric applications, higher derivatives, Taylors theorem, optimization, vector fields, multiple integrals and change of variables, Leibnitzs rule, line integrals, Greens theorem, path independence and connectedness, conservative vector fields, surfaces and orientability, surface integrals, divergence theorem and Stokes theorem. 3 hrs. lec.

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Mathematical Sciences	21-228	Discrete Mathematics	Modelling / Mathematics	The techniques of discrete mathematics arise in every application of mathematics, which is not purely continuous, for example in computer science, economics, and general problems of optimization. This course introduces two of the fundamental areas of discrete mathematics: enumeration and graph theory. The introduction to enumeration includes permutations, combinations, and topics such as discrete probability, combinatorial distributions, recurrence relations, generating functions, Ramseys Theorem, and the principle of inclusion and exclusion. The introduction to graph theory includes topics such as paths, walks, connectivity, Eulerian and Hamilton cycles, planar graphs, Eulers Theorem, graph coloring, matchings, networks, and trees. 3 hrs. lec, 1 hr. rec.
Mathematical Sciences	21-240	Matrix Algebra with Applications	Modelling / Mathematics	Vectors and matrices, the solution of linear systems of equations, vector spaces and subspaces, orthogonality, determinants, real and complex eigenvalues and eigenvectors, linear transformations. The course is intended for students in Economics, Statistics, Information Systems, and it will focus on topics relevant to these fields. 3 hrs. lec., 1 hr. rec.
Mathematical Sciences	21-242	Matrix Theory	Modelling / Mathematics	An honors version of 21-241 (Matrix Algebra and Linear Transformations) for students of greater aptitude and motivation. More emphasis will be placed on writing proofs. Topics to be covered: complex numbers, real and complex vectors and matrices, row space and column space of a matrix, rank and nullity, solving linear systems by row reduction of a matrix, inverse matrices and determinants, change of basis, linear transformations, inner product of vectors, orthonormal bases and the Gram-Schmidt process, eigenvectors and eigenvalues, diagonalization of a matrix, symmetric and orthogonal matrices, hermitian and unitary matrices, quadratic forms. 3 hrs. lec., 1 hr. rec.
Mathematical Sciences	21-295	Putnam Seminar	Modelling / Mathematics	A problem solving seminar designed to prepare students to participate in the annual William Lowell Putnam Mathematical Competition. Students solve and present their solutions to problems posed.
Mechanical Engineering	24-104	Maker Series: Intro to Modern Making	Creating	The course familiarizes students with the safe operation of fabrication tools, including 3D printer, laser cutter, hand tools and power tools through structured activities. Included as preparation for modern making, a significant portion of the course is dedicated to learning the use of SolidWorks 3D CAD software. The acquisition of these skills culminates in the development and fabrication of a prototype solution to a real-world problem.
Mechanical Engineering	24-105	Maker Series: Intro to Laser Cutting & Engraving	Creating	This course will introduce making using subtractive manufacturing with wood working equipment. In this class, prototyping begins with design for fabrication and measurement methods. Two hours of guided work are held in-class each week. Five hours of independent work are conducted outside-class each week. There are no prerequisites to this course, all skill levels are welcome to this introductory course.
Mechanical Engineering	24-200	Maker Series: Intro to Manual Machining	Creating	This 6 week mini course familiarizes students with the operation and safety of machine tools. This gives students knowledge of what goes into engineering designs in building a prototype and also enables them to operate shop machinery as a part of future courses. Prerequisite: Undergraduate Mechanical Engineering standing Machine Shop Practices should be completed prior to Design I 24-370. However, if necessary, it may be scheduled concurrently with Design I in the first mini of the semester.
Mechanical Engineering	24-205	Maker Series: Intro to Welding	Creating	This course will introduce welding metal components together. Two hours of guided work are held in-class each week. Five hours of independent work are conducted outside-class each week. There are no prerequisites to this course, all skill levels are welcome to this introductory course.

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Mechanical Engineering	24-206	Maker Series: Intro to Wood Working	Creating	This course will introduce making using subtractive manufacturing with wood working equipment. In this class, prototyping begins with design for fabrication and measurement methods. Two hours of guided work are held in-class each week. Five hours of independent work are conducted outside-class each week. There are no prerequisites to this course, all skill levels are welcome to this introductory course.
Mechanical Engineering	24-207	Maker Series: Intro to CNC Router	Creating	This course will introduce making with wood using a CNC router machine and software. In this class, prototyping begins with design for fabrication and measurement methods. Two hours of guided work are held in-class each week. Five hours of independent work are conducted outside-class each week. This course has a prerequisite of wood working via 24-206.
Mechanical Engineering	24-212	Maker Series: Make It Move	Creating	This course explores many types of mechanisms for movement and their optimal applications. A significant portion of class will be dedicated to hands-on labs, during which objects are dissected to reveal their methods of movement. Springs, gears, motors, pneumatics, levers, wheels, bearings, and other components will be analyzed for their roles in energy storage, power delivery, and motion. These lessons will culminate in a complete design project, for which students will use rapid fabrication equipment to make a prototype that moves.
Mechanical Engineering	24-300	Maker Series: Intro to CNC Machining	Creating	This course expands upon basic machining principles gained in 24-200 to translate into automated machining. Topics covered include advanced fixturing, CAM programming using Mastercam X7 to produce toolpaths for automated machining and set up and operation of 3 axis vertical CNC machining centers. This course will focus on the programming of these machine tools using geometry from CAD data. Students learn in this course how to do part orientation, plan operation ordering, tool selection, speeds and feeds, cut verification, and to assign all of the above to a specific geometry in the CAD model. Both 2D and 3D machining will be practiced. 24-200 Machine Shop Practice is a pre-requisite for this course.
Modern Languages	82-245	New Directions in Hispanic Studies: Death, Dope, Drag and Doctors in 20th and 21st Century Spanish Film	Reflecting	Even today, I've no idea what the truth is, or what I did with it. Luis Buuel, My Last Sigh Spanish film is known for its quirkiness, irreverence and, as referenced by the inimitable Luis Buuel, contemplation of truth. This course will enter into that discourse by analyzing films from 20th and 21st century Spain. While no prior knowledge of Spanish language, culture nor history are required, interest in cultural exploration and critical thinking are necessary. Film analysis will form part of the crux of the course, as we will examine cinematography, sound, script, and music. Some questions that might arise may include - How does the film portray emotion? How does the film reflect cultural nuance? The class will be student-centered, and thus highly interactive. It is also a goal of this course to stimulate analytical thinking, and to promote the close readings of texts directed by argumentation and well-structured insights.

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Modern Languages	82-248	Arts, Media, and Social Change: Arts in the Revolution – Cuba and Nicaragua	Reflecting	<p>This course will examine the Cuban and Nicaraguan Revolutions and their relationships to artistic production in a larger socio-political context, considering the complex dynamic of both fomenting creative expression, while also (on occasion) stifling its content. 2019 marks 60 years since the Cuban Revolution, touted as the victory of a tiny island over US imperialism, and 40 years since the triumph of the Sandinistas in Nicaragua - both cases garnering broad international attention due to their importance in Cold War political agendas and the subsequent interplay of US-Soviet relationships in the US backyard. While quite different, the Cuban and Nicaraguan Revolutions shared an inherent understanding of the value of capturing the public imaginary and support through the use of the arts to promote their messages and as such, invested significant resources in the promotion of creative production. This course will interrogate the relationships between political and artistic movements, examining for example the formation of ICAIC (Instituto Cubano del Arte e Industria Cinematograficos) in Cuba and the mural movement in Nicaragua. Once these political movements had triumphed, how did artists negotiate the institutionalization of revolution? How did the role of prominent cultural workers like Tomas Gutierrez Alea (Cuba) and Ernesto Cardenal (Nicaragua) evolve as these revolutions aged? We will also question the dynamic between artists whose works express discontent and the State - what was/is the space for dissent? How do artists of newer generations create space for different types of expression that diverge from what early revolutionary moments considered to be transformative? Decades later with deeply entrenched governments, what now is the relationship between the arts and socio-political change?</p>
Modern Languages	82-267	Beyond the Mafia & Michelangelo: Italy Unmasked	Reflecting	<p>Eclipsed by the consumer obsessions of tourists and the most well-known figures of Italian history, the uniqueness of Italy, offering distinct cultures in the north, central, and south, is rarely understood by outsiders. In this course, students will discover an Italy rich with cultural variants, radically diverse histories, customs, cults, and superstitions, in addition to physical expressions of culture in cooking and clothing, art and architecture. Students will identify and critically analyze diversity within the peninsula and its islands, and expand their awareness and understanding of the role of culture in behavior. Film, documentaries, and readings from epistolary and literary sources will help reveal a more profound Italy, for example, the science of Dulbecco (the Human Genome), the architecture of Trulli conical houses, the religious importance of Pitigliano (Little Jerusalem), and the immigration problems of San Marino. Coursework will include class participation, readings, film viewings, and writing. Final projects will be based on interviews and oral histories with the Italo-American community in Bloomfield (Pittsburgh), leading to critical comparisons of that population with Italians in Italy. This course is offered in English.</p>

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Modern Languages	82-285	Podcasting: Language & Culture Through Storytelling	Creating	<p>Do you love stories? Stories told on the radio have always had significant power. For example, the 1938 War of the Worlds broadcast by Orson Welles was so effective that it panicked the entire United States. Today, podcasts such as Serial, This American Life, and The Moth have the same power to tell stories and provide audiences with rich, intimate and immersive audio experiences while often supporting diversity and giving voice to minorities and those under-represented in mainstream media. Owing its rising popularity to the ease and accessibility of production and distribution, there has never been a better time to create and tell stories in audio. In this course students will take on the role of podcast producers, learning while creating a series of podcasts that explore linguistic and cultural landscapes with the goals of educating and entertaining. Possible audio resources include field interviews with native speakers in their own language, allowing student producers to document informants personal histories and aspects of their life related to culture, multilingualism, or political, social or environmental issues. Students will blend studio recordings with interviews and/or suitable found recordings, music, and sound. Coursework will include skill development on audio recording and podcasting, production management, creative thinking, materials sourcing, and giving and receiving constructive feedback from classmates and varied audiences on team and individual projects. The course will be offered in English.</p>
Modern Languages	82-293	Topics in Russian Language & Culture: Russian Cinema: From the Bolshevik Revolution to Putin's Russia	Reflecting	<p>Last night I was in the kingdom of shadows, said the writer Maxim Gorky in 1896 after seeing a film for the first time. How terrifying to be there Early film inspired fear and fascination in its Russian audiences, and before long became a medium of bold aesthetic and philosophical experimentation. This seminar-style course surveys the development of Russian and Soviet film, paying equal attention to the formal evolution of the medium and the circumstances historical, cultural, institutional that shaped it. We will examine Sergei Eisensteins and Dziga Vertovs experiments with montage in light of the events of the Bolshevik Revolution and the directors engagement with Marxism; Georgi Alexandrov and the Vasiliev brothers Socialist Realist production against the backdrop of Stalinist censorship; Andrei Tarkovskys and Kira Muratovas Thaw-era films within the broader context of New Wave Cinema; and the works of contemporary directors, including Aleksei Balabanov, Alexander Sokurov, and Andrey Zvyagintsev, in connection with the shifting social and political landscape of post-Soviet Russia. Besides introducing students to the Russian and Soviet cinematic tradition, this course will hone their skills in close visual analysis. No prior knowledge of Russian language or culture is required. The course is conducted in English, but students will have the option to do work in Russian for three extra course units.</p>