CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	CIVE	3320	Civil Engineering	Francis College of Engineering	Environmental Engineering Laboratory (Formerly 14.332)	Laboratory experiments to illustrate analysis of environmental samples and experimental techniques, normally used in support of water and wastewater treatment facilities. Course emphasizes data acquisition and analysis, and engineering report writing.	Focused	Course focuses chemical processes of water treatment facilities and the relationship with a sustainable and clean environment.
UGRD	CIVE	3620	Civil Engineering	Francis College of Engineering	Environmental Engineering (Formerly 14.362)	Physical, chemical and biological principles of the treatment of water and wastewater are considered along with their application to treatment systems. The system components of wastewater and water treatment plants are studied to provide a basic design capability. Hazardous waste site remediation is also discussed.	Focused	Course integrates the environmental aspects of sustainability in environmental engineering including water/wastewater treatment plant design and hazardous waste remediation.
UGRD	FAHS	2130	Intercollegiate FAHSS	College of Fine Arts, Humanities and Social Sciences	Foundations in Liberal Studies (Formerly 59.213)	The Foundations course is a required course for all BLA majors. The course examines the value and importance of drawing on various academic disciplines to understand issues that are too complex to be addressed effectively using any single discipline. Using a case study approach, the course will explore how the elements of various environment, governance, peace and conflict, etc. Upon completing the course, the student will be able to view the courses in his/her two BLA Concentrations from an interdisciplinary perspective by observing how elements of a give discipline can contribute to the understanding of global problems. These skills will be applied in the BLA Capstone course.	Focused	The course uses interdisciplinary methodology to understand complex problems dealing with environment,health, economic and social issues, etc., in order to propose sustainable soluVons that would not be possible using a single disciplinary perspective.
UGRD	SOCI	2100	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of Food (Formerly 48.210)	This course is about Sociology of food exploring the connection between food, society and culture. Our food choices are influenced by age, gender, ethnicity, class and religion. History of food and methods of food production contribute to understanding of social relations among individuals and social changes in society. This course will examine 1. role of food in society, culture and change, 2. changes in food production from simple to complex societies and 3. problems associated with new systems of food production locally and globally.	Focused	Course focuses on the relationship between food, society and culture as well as food production.
UGRD	ENVI	2010	Environmental Science	Kennedy College of Sciences	Earth and Environmental Systems I (Formerly 87.201)	An integrated study of the interactions between the lithosphere, hydrosphere, atmosphere, and biosphere. Emphasis will be placed on the physical and biological principles which underlie and control these interactions, pollution, geologic hazards, climate change, and social and political aspects which govern our relationship with the natural environment.	Focused	Course integrates physical and biological principles of interactions of Earth's atmosphere and biosphere with specific focus on pollution, climate change, and the social and political implications.
UGRD	ENVI	2020	Environmental Science	Kennedy College of Sciences	Earth And Environmental Systems II (Formerly 87.202)	A continuation of Principles of Earth & Environmental Systems.	Focused	Course integrates physical and biological principles of interactions of Earth's atmosphere and biosphere with specific focus on pollution, climate change, and the social and political implications.
UGRD	ENVI	2040L	Environmental Science	Kennedy College of Sciences	Earth And Environmental Systems Laboratory (Formerly 87.204)		Focused	Course integrates physical and biological principles of interactions of Earth's atmosphere and biosphere with specific focus on pollution, climate change, and the social and political implications.
UGRD	CIVE	1070	Civil Engineering	Francis College of Engineering	Introduction to Engineering for Civil and Environmental (Formerly 25.107/14.107)	14.107 Introduction to Engineering for Civil and Environmental Engineers	Focused	Course presents students with a general understanding of the key concepts of Civil and Environmental Engineering.
UGRD	POLI	1750	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to Environmental Politics (Formerly 46.175)	This course introduces major concepts in environmental politics to provide a comprehensive understanding of the formation of environmental policy in the United States. Throughout the course, particular attention is paid to the role of government and markets in creating environmental crises and shaping policy responses.	Focused	Course focuses on the relationship between the environmental politics and the formation of environmental policy in the United States.
UGRD	ECON	4150	Economics	College of Fine Arts, Humanities and Social Sciences	Introduction to Environmental Economics (Formerly 49.315/415)	This is a renumbering of an existing course, 49.315. The renumbering to the 400 level is to allow Masters students in programs with environmental content to take this course for credit with their advisor's approval. This course introduces students to the economic and policy aspects of environmental quality and natural resource issues. Simple and complex models are used to blend economic theory with environmental facts. Students will learn to derive policy insights from theoretical constructs. The primary objective is to show how the basic principles in economics can play a valuable role in analyzing and evaluating critical environmental issues and help in determining policy guidelines. Standard benefit cost or efficiency criteria will be applied to a wide variety of environmental issues.	Focused	Course incorporates environmental aspects of sustainability by examining environmental quality and natural resources issues.

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UGRD	ECON	3100	Economics	College of Fine Arts, Humanities and Social Sciences	Economics of Less Developed Countries (Formerly 49.310)	Formulation of an approach to development that includes the role of goals (growth, equity), sectors (agriculture, industry, services), resources (labor, capital, technology), government, international (trade, investment, debt), and political and socio-cultural factors. Examines success in a few Asian countries, failure in most of Africa, and crisis in South America emphasizing current controversies.	Focused	Course relates the economics of under-developed countries to current global conflicts.
UGRD	EECE	4140	Electrical & Computer Engineering	Francis College of Engineering	Integrated Power Systems (Formerly 16.414/514)	Power System Operations and Electricity Markets provide a comprehensive overview to understand and meet the challenges of the new competitive highly deregulated power industry. The course presents new methods for power systems operations in a unified integrated framework combining the business and technical aspects of the restructured power industry. An outlook on power policy models, regulation, reliability, and economics is attentively reviewed. The course lay the groundwork for the coming era of unbundling, open access,, power marketing, self-generation, and regional transmission operations.	Focused	Course examines electrical markets and the power industry and ways to make the industry more efficient for public and private sectors.
UGRD	LIFE	2140	Biology/Life Science	Kennedy College of Sciences	Human Ecology (Formerly 83.214)	Designed to reveal and discuss the increasing problems of overpopulation in regard to environmental deterioration, living space, limits of natural resources and the adverse effects of human alteration on destruction of the natural ecosystem. The implications of current literature and news items will be emphasized.	Focused	Course focuses on the problem of human over population and the negative impact on the environment.
UGRD	ENVI	3010	Environmental Science	Kennedy College of Sciences	GIS in Earth and Environmental Sciences (Formerly 87.301)	This course introduces earth and environmental science students to applications of geographic information systems, emphasizing hands-on field experience in collecting spatial location data and in mapping environmental data using GIS software. Covers fundamentals of: geodesy; spherical and plane coordinate systems; spatial data concepts, including error, accuracy, and precision; location measurement technologies including GPS: vector and raster GIS data structures and file types, basic GIS operations, including georeferencing of raster files and editing of vector files; assembly of field data over a base map; analysis of spatial relationships using GIS tools; symbology and methods of map presentation.	Focused	GIS in relation to earth and environmental sciences is a critical tool to conveying and understanding sustainability concepts through real world applications.
UGRD	MECH	4260	Mechanical Engineering	Francis College of Engineering	Green Energy Engineering (Formerly 22.426)	Introduces a comprehensive range of green energy sources, and the tools and techniques to use that energy. A strong emphasis is given to residential applications, particularly those that are cost effective. Topics include solar energy, photovoltaic, water power, wind power, geothermal heating, and bio-fuel production and use. Course will also investigate architectural considerations essential to effective implementation of green energy. Course is open to Seniors in engineering and science and those with a solid knowledge of vector notations and college algebra. Familiarity with the MATLAB computing environment would be useful.	Focused	Course focuses on the application of engineering to clean and renewable energy sources.
UGRD	BIOL	4160	Biological Science	Kennedy College of Sciences	Climate Change: Science, Communication, and Solutions (Formerly 81.416)	Climate change offers one of the greatest challenges yet faced by society and scientists. The scientific consensus is clear that climate change is occurring, its pace is accelerating, its impacts on human society will be largely negative, and it is largely caused by anthropogenic greenhouse gas emissions. Yet, despite strong scientific evidence for the enormous challenges that society may face, scientists' attempts to disseminate that evidence beyond their peers have not yet been successful. Indeed in today's media world of blogs, YouTube video clips, and sound-bites, confusion over the scientific reality of climate change frequently dominates the discourse in classrooms and communities. This course will provide students with the tools and knowledge that they need to develop their own well-informed view of climate change. Because climate change is both impacted by humans and will increasingly impact society, this course takes a cross-disciplinary approach, integrating science, policy solutions, and media literacy as they relate to climate change.	Focused	Course focuses on aspects contributed to climate change, both natural and man-made, and how the shifting climate will impact the Earth in the near future.

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UGRD	SOCI	2360	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociological Approaches to the Environment (Formerly 48.236)	Focusing on case studies of recent and pending environmental disasters, this course will trace how political, social, economic and cultural arrangements and choices contribute to environmental catastrophes and their resolution. In order to identify possibilities for agency, students will play several environmental games in which they will assume roles in the global economy, governmental and civil society to identify possibilities for agency. As a final project, students will describe a recent disaster identifying both structures that create environmental stresses and the options that might exist for structural changes. The project is intended to develop both critical thinking and communication skills.	Focused	Course focuses on social, political, economic and cultural reactions to environmental disasters.
UGRD	SOCI	3300	Sociology	College of Fine Arts, Humanities and Social Sciences	Fast Food, Hot Planet: Sociological Approaches (Formerly 48.330)	With an eye on climate change sustainability, this course maps the social and historical dimensions of crisis and inequalities of food production and distribution. In addition to exploring food security's relation to sustainable food production, students will strengthen critical thinking, writing, and library research skills.	Focused	Course describes the social implications of food production and distribution specifically related to climate change sustainability.
UGRD	EECE	4280	Electrical & Computer Engineering	Francis College of Engineering	Alternative Energy Sources (Formerly 16.428)	PV conversion, cell efficiency, cell response, systems and applications. Wind Energy conversion systems: Wind and its characteristics; aerodynamic theory of windmills; wind turbines and generators; wind farms; siting of windmills. Other alternative energy sources: Tidal energy, wave energy, ocean thermal energy conversion, geothermal energy, solar thermal power, satellite power, biofuels. Energy storage: Batteries, fuel cells, hydro pump storage, flywheels, compressed air.	Focused	Course integrates the environmental aspect of sustainability by focusing on alternative energy sources compared to conventional fossil fuels and environmental benefits.
UGRD	EECE	4290	Electrical & Computer Engineering	Francis College of Engineering	Electric Vehicle Technology (Formerly 16.429)	Electric vehicle VS internal combustion engine vehicle. Electric vehicle (EV) saves the environment. EV design, EV motors, EV batteries, EV battery chargers and charging algorithms, EV instrumentation and EV wiring diagram. Hybrid electric vehicles. Fuel cells. Fuel cell electric vehicles. The course includes independent work.	Focused	Course focuses on the application of electrical vehicles in the market and the positive impact on the environment.
UGRD	BIOL	2400	Biological Science	Kennedy College of Sciences	Evolution, Ecology and Conservation (Formerly 81.240)	Over 5 million species thrive in amazingly diverse habitats on Earth ranging from the extreme freezing cold of the poles to the lush warmth of the tropics. How did this fantastic diversity arise on our earth? How are these species intimately interconnected with one another, their communities and their ecosystem? How can we save this remarkable biodiversity from extinction? This course will address these key questions by examining the fundamental concepts of evolution, ecology and conservation biology. Students will be expected to attend a discussion section in which they will examine case studies and primary scientific literature.	Focused	Course focuses on biodiversity and its relationship to global environments and the impact it has on the Earth.
UGRD	BIOL	2420	Biological Science	Kennedy College of Sciences	Problems in Evolution, Ecology and Conservation (Formerly 81.242)	A discussion session designed to reinforce material presented in 81.240, Evolution, Ecology and Conservation. An emphasis will be placed on problem solving.	Focused	Course integrates environmental and biodiversity aspects of sustainability focusing on solving problems related to evolution, ecology and conservation.
UGRD	NURS	3200	School of Nursing	College of Health Sciences	Community-Focused Health and Policy (Formerly 33.320)	This course provides a foundation to community health nursing with the community, family and individual as Client. This course presents an overview of the US health care delivery system with an emphasis on the role of government in healthcare, Medicaid, and current efforts at healthcare reform.	Focused	Course focuses on community health and the role the government plays in offering health care to families.
UGRD	LIFE	1250	Biology/Life Science	Kennedy College of Sciences	Plants and Human Society (Formerly 83.125)	This course is designed primarily to fulfill the science elective requirement for the non-science major. Its purpose is to provide the undergraduate student who is not majoring in the biological sciences with an introduction to the study of plants and their importance in our everyday world. The importance of plants in agriculture, medicine and industry will be emphasized.	Focused	Course focuses on the role of plants in society, specifically medicine and agriculture.
UGRD	LIFE	1270	Biology/Life Science	Kennedy College of Sciences	Plants & Human Society Lab (Formerly 83.127)	Not suitable for credit towards any degree in the Division of Sciences.	Focused	Course focuses on the role of plants in society, specifically medicine and agriculture.
UGRD	ENVI	2030L	Environmental Science	Kennedy College of Sciences	Earth And Environmental Systems Laboratory (Formerly		Focused	Course integrates physical and biological principles of interactions of Earth's atmosphere and biosphere with specific focus on pollution, climate change, and the social and political implications.

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UGRD	LGST	3670	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Environmental Law (Formerly 41.367)	This course examines the legal and administrative problems of protecting the quality of the human environment. Federal and state legislation on environmental policy is studied. Public interest litigation as a supplement to the enforcement of environmental law is discussed. The course also focuses on the practical problems of balancing the needs of business, the global competitiveness of the United States, the increasing demand for natural resources, and the need to protect, preserve, and restore the environment. The importance of sustainable development and environmental ethics are discussed.	Focused	Class focuses on federal and state legislation on environmental policy including how it affects global competitiveness, demand for natural resources, environmental protection, environmental ethics and sustainable development.
UGRD	ENVI	1010	Environmental Science	Kennedy College of Sciences	Environmental Science Seminar (Formerly 87.101)	A survey of the field of environmental science, curriculum options, and career opportunities. Presentations by members of the department and guest speakers.	Focused	Course focuses on the field of environmental science.
UGRD	ENVI	1020	Environmental Science	Kennedy College of Sciences	Environmental Problems Seminar (Formerly 87.102)	A survey of environmental problems and issues. Topics include air, water, and noise pollution; solid and liquid waste disposal; and the social, political, and economic implications of these issues. Readings, discussions, guest speakers, and field trips.	Focused	Course covers the environmental problems the world is currently facing and incorporates related social, political and economic aspects of sustainability.
UGRD	POLI	3320	Political Science	College of Fine Arts, Humanities and Social Sciences	The Politics of Food (Formerly 46.332)	The course will examine current debates in food politics over: regulatory politics and the appropriate reach of the state in food labeling, safety, and oversight; genetically modified food, organic and sustainable agriculture, the effects of economic globalization of the food supply chain and the future of the world food system.	Focused	Course relates food politics and its role in public health with a specific focus on sustainable agriculture.
UGRD	HIST	3010	History	College of Fine Arts, Humanities and Social Sciences	The World of Things: Consumer Cultures in the Modern West (Formerly 43.301)	This course will examine the emergence and historical impact of consumer cultures in the modern West, from the eighteenth century through the present. Topics to be covered will include the emergence of spaces of consumption (the home, the commercial/spectacular metropolis, the department store, the shopping mall, the tourist site), changing attitudes toward shopping and spending, the construction of modern social identities of class, gender, generation and race through consumption, and political struggles over consumption.	Focused	Course focuses the state of economic stability of Western culture through consumerism, both past and present.
UGRD	BIOL	4230	Biological Science	Kennedy College of Sciences	Biology of Global Change (Formerly 81.423)	An examination of the role of life processes in controlling the cycling of elements on the surface of the Earth and atmosphere from the molecular to the global level. Students will learn how the different physical components of Earth interact, how these interactions are influenced by life, and how they affect Earth's habitability now and in the future.	Focused	Course provides an understanding of how elements and molecular compounds interact with Earth's natural resources and how these affect Earth's habitability now and in the future.
UGRD	CIVE	4600	Civil Engineering	Francis College of Engineering	Water Resources Engineering (Formerly 14.460)	This course is a continuation and extension of Fluid Mechanics, with a focus on engineering applications of hydraulic and hydrologic engineering. This course covers fundamental concepts of open-channel flow, hydraulic structures, design of open channels, surface-water hydrology, and groundwater hydrology.	Focused	Course evaluates the structure and mechanisms of water resource engineering. Sustainability and water conservation are critical compnents of these processes.
UGRD	57	427	#N/A	#N/A	Sustainable Housing Development and Land Use: Policy and Practice	Housing is fundamental to the quality of life in communities, and housing policies shape the availability of this fundamental good. This course will examine the economic, environmental, social, and cultural factors that shape housing and its sustainability. Overall housing and land use policy in the United States will be summarized, with students learning of the ways in which housing policy impacts communities, states, and regions. The course will then give students a detailed understanding of the process through which housing is developed and of the role the market, government, funders, workers, and housing consumers play in influencing the creation and development of housing. The course will highlight the ways in which current housing development policy and practices are not sustainable, and will examine more recent efforts to establish standards and practices that enhance sustainability. Students will learn how to take a housisng project through the various stages, such as project conceptualization, market analysis, design, site acquisition, financing, construction, and occupancy. While the course focuses on the U.S. context, students will learn of international efforts to achieve greater sustainability in housing. The course will provide students with both practical and theoretical knowledge of housing and land use policy and development practices. Case studies of actual projects will be presented.	Focused	Course examines how U.S housing policy and practice shape people's quality of life by focusing on all aspects of sustainability, including social, environmental, and economic.

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UGRD	ATMO	4080	Atmospheric Science	Kennedy College of Sciences	The Climate System (Formerly 85.408)	The course covers the main elements of the climate system--the atmosphere, ocean, biosphere, solid earth, and cryosphere--and the primary source of energy, the sun. The elements are examined in terms of observed structure and important physical processes, the ways in which they interact, and how they can be modeled. The global energy budget is discussed and both natural and human-caused climate change are considered.	Focused	Major elements of the climate system and global energy budget are examined in order to understand natural and human caused climate change.
UGRD	BIOL	2440	Biological Science	Kennedy College of Sciences	Biodiversity & Conservation Australia's Tropics (Formerly 81.244)	The most diverse ecosystems in the world are Australia's Great Barrier Reef and Daintree Tropical rain forest. To explore the basic principles of biodiversity and conservation biology we will use the case studies of the coral reefs and tropical rainforest of Cairns, Australia. The course will start off at UML, studying three aspects of biodiversity: its origin, the threats, and its conservation. Next we will to go Australia where students will experience the wonders of these ecosystems, and learn first hand about the scientific research on the flora and fauna, and learn about the efforts to conserve these treasures. Students will participate in restoration projects of the tropical rainforest and coral reefs, and hear lectures on conservation from scientific researchers to the Aborigines.	Focused	Course focuses on the biodiversity and conservation of Australia's Great Barrier Reef and Daintree Tropical rain forest.
UGRD	CIVE	4090	Civil Engineering	Francis College of Engineering	Environment Engineering Geology (Formerly 14.409)		Focused	Course addresses envrionmental engineering approcahes with resepct to geology
UGRD	CIVE	4660	Civil Engineering	Francis College of Engineering	Introduction to LEED (Formerly 14.466)	This course examines the principles of sustainability and how they are applied to engineering and the built environment. Areas covered include energy, water, materials, transportation, and green building principles. Issues of evaluation of sustainability, including life cycle analysis and rating systems, are also discussed. This course fulfills the educational requirements for eligibility to take the LEED (Leadership in Energy and Environmental Design) Green Associate exam.	Focused	Course integrates all aspects of sustainability in engineering and the built environment.
UGRD	ECON	1010	Economics	College of Fine Arts, Humanities and Social Sciences	The Economics of Social Issues (Formerly 49.101)	Social Issues in Economics will take economic theory and apply it to public policy decisions. Topics that will be covered in the course are; Economics of crime, Should we legalize drugs, is it more economical to imprison someone for life or seek the death penalty and did the Supreme Court decision in Roe v Wade (the legalization of abortion) contribute to the declining crime rate that began in the 90,s: The economics of unintended consequences will explore how well meaning public policy sometimes backfires and has the reverse effect; health economics will look at the rising cost of healthcare and the effect of Obamacare; Taxes and poverty, is there a natural rate of poverty (does minimum wage increases actually contribute to a higher rate) and does taxing the rich less actually help the economy; Energy & Environmental economics, what is the effect of global warming, or is it global cooling, and what is the best energy mix for the 21st century and lastly, who has it right, New Keynesians or Neo-Classicals.	Focused	Course examines the relationship between economic and social issues.
UGRD	GEOL	1510	Geoscience	Kennedy College of Sciences	Earth and Life (Formerly 89.151)	This course will trace the changes in both the Earth and a variety of organisms through an investigation of fossils, field sites, map interpretation, and basic earth science principles. The effects of physical change and geobiochemical processes on evolution will be stressed as will the effects of life on Earth. Students will gain an appreciation of the very special nature of the earth and its symbiont life forms when seen against the background of other planets.	Focused	Course explores the relationship between life on Earth and Earth itself with focus on the effects of physical change and geobiochemical processes on evolution.
UGRD	GEOL	1530L	Geoscience	Kennedy College of Sciences	Earth and Life Laboratory (Formerly 89.153)	This laboratory will concentrate on the identification of fossils, discrimination of fossils from sedimentary structures, and interpretation of ancient environments from lithology, fossils, and maps. A field trip is required.	Focused	Course examines fossils to better understand the past environments on Earth.
UGRD	HIST	2790	History	College of Fine Arts, Humanities and Social Sciences	History of Lowell (Formerly 43.279)	This course will provide an overview of the growth, decline, and rebirth of the city of Lowell, Massachusetts. Topics will include the Industrial Revolution, role of women and unions in the workplace, immigration and the formation of ethnic neighborhoods, urban renewal, and historic preservation. The survey will also discuss notable personalities such as labor activist Sarah Bagley, Civil War general Benjamin Butler, writer Jack Kerouac, Senator Paul Tsongas and boxer Micky Ward. The foregoing names may differ over time.	Focused	Course integrates social, economic, political and cultural aspects of sustainability.

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UGRD	HIST	3160	History	College of Fine Arts, Humanities and Social Sciences	American Environmental History (Formerly 43.316)	This course explores the environmental history of early America and the	Focused	Course focuses on the environmental dynamics of early America.
UGRD	PHIL	3270	Philosophy	College of Fine Arts, Humanities and Social Sciences	Environmental Philosophy (Formerly 45.327)	An examination of the philosophical foundations of environmentalism. Addresses both the question of ethical duties we owe to animals and to nature, and also the question of man's relation to the natural world.	Focused	Course integrates the environmental aspects of sustainability by examining environmentalism and ethics.
UGRD	PHIL	3680	Philosophy	College of Fine Arts, Humanities and Social Sciences	The Politics of Food (Formerly 45.368)	This class will examine the moral and political implications of the food we eat. Topics we'll cover include genetically modified organisms, factory farming, animal rights and welfare, agricultural pollution, agricultural subsidies, third world hunger, the obesity epidemic, and the industrial food system and its alternatives.	Focused	Course relates food to public health.
UGRD	PHYS	4240	Physics	Kennedy College of Sciences	Environmental Health Physics (Formerly 98.524 & 94.424)	Natural and man-made sources of environmental radioactivity and radiation; environmental transport in air, water, and soil; exposure pathways; environmental standards and regulations; environmental monitoring and surveys (MARSSIM); contaminated site characterization, and site remediation; environmental radiological impact of industry, accidents, and natural and man-made disasters.	Focused	Course examines factors that contribute to environmental pollution and imbalances, covering man-made and environmental disasters.
UGRD	POLI	3580	Political Science	College of Fine Arts, Humanities and Social Sciences	Global Environmental Policy (Formerly 46.358)	This course explores contemporary international environmental issues from both theoretical and policy perspectives; consideration too of broader forces impacting international environmental politics.	Focused	Course focuses on the relationship between politics and the environment.
UGRD	PUBH	1000	Work Environment	College of Health Sciences	Environmental Health Seminar (Formerly 31.100)	This required, non-credited seminar for Freshman and Sophomore Environmental health Students explores current affairs and controversies in environmental health theory and practice. Readings and outside speakers will supplement short lectures, faculty and student-led discussions.	Focused	Course focuses on the need for sustainable environmental health.
UGRD	PUBH	2010	Work Environment	College of Health Sciences	Community Health and Environment (Formerly 31.201)	This course emphasizes the concepts, philosophy, and principles of public health and their relationship to physical, mental, and social well-being of the community. The focus is on the prevention of disease, the promotion and maintenance of health, and the provision of environmental and personal health services through organized community effort.	Focused	Course focusses on the relationship between community health and the surrounding environment.
UGRD	PUBH	2080	Work Environment	College of Health Sciences	Principles of Environmental Health Science (Formerly PUBH.208)	This is a survey course that provides an overview of the rapidly growing field of environmental health, through an introduction to the links between environmental stressors and impacts on public health. The course will explore human and industrial activities that impact on health such as overpopulation, food production, air and water pollution, waste, toxic substances, pests, and global climate change. The course will also examine the types of diseases and illnesses that result from environmental impacts. These impacts have multiple causes and understanding these can in turn provide clues as to the most effective prevention options. Students will explore topics of interest in greater detail through short writing assignments.	Focused	Course focuses on the environmental dynamics of sustainability within a community and the field of environmental health.
UGRD	PUBH	2110	Work Environment	College of Health Sciences	Sustainable Development (Formerly PUBH/57.211)	This course examines workplace and regional factors that shape the prospects for sustainable prosperity and worker and community empowerment. The course begins by reviewing recent trends in the distribution of income and wealth and the industrial structure of the New England economy. The historical dynamics shaping work organization and regional development are examined. Several industry case studies are selected because of their importance to the regional and national economy. The case studies provide focus for studying the strategic choices made by firms in mature industries and newly emerging regions; the basis of competitive advantage for Japanese firms and the response of American rivals; and the influence of the product cycle and regional institutions on capture or retention of emerging and mature industries. The final section of the course focuses on the prospects for sustainability of the organization of production and its environmental impact, incentives for skill development and technological innovation, and shared prosperity. A central course objective is to foster an understanding of the links between the workplace and region in the pursuit of sustainable development and shared prosperity.	Focused	Course focuses on the social and economic dynamics of sustainability by understanding sustainable development.

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UGRD	PUBH	3060	Public Health	College of Health Sciences	Socio-Ecological Health Assessment (Formerly 31.306)	Systems thinking, ecological and spatial principles and techniques are used to assess multiple contemporary health issues such as health literacy, emergence,reemergence of infectious diseases, climate change impacts and dimensions, aging population, and war and violence among other topics. The practical component of the course includes mapping and spatial analysis projects. Juniors only.	Focused	Course focuses on the socio-ecological aspects of sustainability by examining contemporary health issues including climate change impacts.
UGRD	PUBH	3100	Work Environment	College of Health Sciences	Communicable Diseases and Environmental Health (Formerly PUBH.310)	This course introduces students to the fundamentals of communicable diseases and how humans and the environment affect their distribution and impact. The course will provide an overview of infectious deceases including how they affect humans, their vectors and sources. Communicable disease investigation and tracking, as well as prevention planning and response will be discussed. The course covers the following aspects of communicable disease: the public health significance; overview of Immunology and disease development and transmission; sources and carriers of disease, outbreak investigation, and disease control and prevention.	Focused	Course addresses the public health significance to communicable diseases and environmental health.
UGRD	PUBH	3110	Work Environment	College of Health Sciences	Toxicology for Environmental Health (Formerly PUBH.311)	This course introduces students to the principles of toxicology in the context of environmental health. The course will introduce basic principles and mechanisms of toxicology with review of necessary human biology. Toxicology of major organ systems (e.g. respiratory, neurological, immunological, cardiovascular) will be reviewed and presented in the context of major occupational and environmental diseases. The toxic responses of major workplace and environmental health hazards including toxic chemicals, physical agents, biological agents, and their mechanisms of action will be discussed. The course will focus on case examples of toxic agents and their impacts. New directions in toxicology and communicating toxicology will be explored.	Focused	Course focuses on the impact of toxins in the environment.
UGRD	PUBH	3160	Work Environment	College of Health Sciences	Environmental Health in Practice (Formerly 31.316/19.507)	Through a combination of class lectures, field trips, and a service learning project, this course is designed to introduce students to the daily reponsiblities of an environmental health professional. The class will provide indepth knowledge and hands-on understanding of topics such as food safety, indoor air quality, water quality, waste water disinfection, and chemicals management. Through lectures and guest speakers students will understand the challenges facing environmental health professionals and the resources available to them. Students will undertake a final group project for a health board or other organization.	Focused	Course focuses on the daily responsibilities of an environmental health professional and considers food safety, water and air quality and chemicals management.
UGRD	PUBH	3700	Work Environment	College of Health Sciences	Food Safety and Agriculture (Formerly 31.370)	This course focuses on food safety and agriculture using a production-consumption life cycle model. Multiple ecological, socio-economic and regulatory aspects of food production, preparation, and consumption systems are explored. The course has an integrated theoretical and experiential learning component.	Focused	Course focuses on the socio-economic dynamics of safety and agriculture.
UGRD	PUBH	3770	Work Environment	College of Health Sciences	Environmental Health Field Evaluation I (Formerly PUBH.377)	This course will introduce students to the steps and processes for evaluating and addressing environmental health hazards in a local environmental health setting, focusing on the indoor environment, including; food safety, pool and beach inspections, tattoo parlor and fitness facilities, housing and public building indoor air quality, and workplace health and safety. Students will learn techniques for sampling; how to plan a field evaluation, take samples, analyze evaluations, and develop preventive recommendations. Field sampling and analysis will be supplemented with class lectures examining science and policy. This course is the first of a two semester applied environmental health practice course sequence.	Focused	Course explores the evaluation of identifying environmental hazards.

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UGRD	PUBH	4770	Work Environment	College of Health Sciences	Environmental Health Field Evaluation ll (Formerly PUBH.477)	This course will introduce students to the steps and processes involved in evaluating and addressing environmental health hazards in the outdoor environment, including water and air quality, and waste management. Students will learn techniques for sampling; how to plan an environmental audit, take samples, analyze evaluations, and develop preventive recommendations. Field sampling and analysis will be supplemented with class lectures examining science and policy, including environmental chemistry and environmental policy. Specific sampling and evaluation concepts will be explored through a focus on particular hazardous agents in specific environments. This course is the second of a two semester applied environmental health practice course sequence.	Focused	Course explores the evaluation of identifying environmental health hazards including water and air quality and waste management.
UGRD	PHYS	3160	Physics	Kennedy College of Sciences	Science and Technology in an Impoverished World (Formerly 95.316)	Intended for junior-level science and engineering majors, this is a one-semester 3-credit course focused of the impact of science and technology in poverty stricken regions of the world. Students will be challenged to consider the implementation of past and present technologies for solving resource shortages, evaluate and strengths and limitations of these solutions while developing alternatives to address future barriers to positive change. Encouraged to work toward these issues, students will; 10 Pursue and evaluate topics in science and technology through the skills of inquiry, research, critical thinking and problem solving. 2) Demonstrate the knowledge for quantitative and qualitative analysis of problems in science and technology. #0 Analyze and interpret issues in interdisciplinary areas of science and engineering developing a level of comfort with solving unfamiliar problems using acquired knowledge and skills.	Focused	This course focuses on resource management and the impact of science and technology in poverty stricken regions. Students are challenged to develop new concepts for sustainable and scalable technologies applicable to impoverised world regions.
GRAD	MECH	5290	Mechanical Engineering	Francis College of Engineering	Fuel Cell Fundamentals (Formerly 22.529)	The primary objective of this course is to understand the fundamental science and engineering of fuel cells and redox flow batteries (i.e., reversible fuel cells). The fundamental principles of electrochemistry, thermodynamics, and kinetics of electrochemical reaction processes, as well as mass transport in electrochemical energy systems will be considered. Emphasis will be placed on operating principles and the design and diagnostics of the proton exchange membrane fuel cell as a portable energy conversion system, and the vanadium redox flow battery as a large-scale energy storage system. Cell components and their influence on the overall performance of these systems will be discussed in detail. An introduction to the cost analysis of electrochemical energy storage will be presented.	Focused	Course analyzes the fundamentals on fuel cells and their application to the energy sector.
GRAD	PSYC	6250	Psychology	College of Fine Arts, Humanities and Social Sciences	Advanced Community Dynamics: Lowell (Formerly 47.625)	An examination of principles that influence community structure, function, and evolution over time. Students will learn how community patterns and activities can best be understood and how community problems and concerns can best be addressed, employing psychological and other conceptual frameworks and perspectives. Specific emphasis will be placed on the historic and diverse city of Lowell. Prerequisites: 47.500 and 47.512.	Focused	Course focuses on the relationship between people of Lowell and incorporates the social aspects of sustainability.
GRAD	ACCT	6020	Accounting	Manning School of Business	Advanced Management and Sustainability Accounting (Formerly ACCT/60.602)	In the new environment of change, accountants are increasingly called on to support strategy through increasing efficiencies and reducing costs. This course will examine the different ways that accountants can add value through an understanding of value chain activities, use of technology, and extending value chain activities to develop a sustainability strategy.	Focused	Course focused on financial and social responsibility aspects of sustainability in accounting.
GRAD	PUBH	6550	Work Environment	College of Health Sciences	Introduction to Environmental and Natural Resource Economics (Formerly 19.655)	This course introduces students to the economic and policy aspects of environmental quality and natural resource issues. The course also incorporates relevant work-environment related issues. Simple and complex models are used to blend economic theory with environmental facts. Students will learn to derive policy insights form theoretical constructs. The primary objective is to show how the basic principles in economics can play a valuable role in analyzing and evaluating critical environmental issues and help in determining policy guidelines.	Focused	Course focuses on economic and policy aspects of environmental quality and natural resources management.

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GRAD	MECH	5340	Mechanical Engineering	Francis College of Engineering	Green Combustion and Biofuels (Formerly 22.534)	Fundamentals of combustion and pollutant formations in application to internal combustion engines, turbines, and fire safety. Concepts include flame structure, flame speed, flammability,ignition, reaction kinetics, nonequillibrium processes, diffusion flames, and boundary layer combustion. Additional specific emphasis on combustion modeling, green approaches to energy production, and biofuels.	Focused	Course examines the fundamentals of combustion with emphasis on green approaches to energy production and biofuels.
GRAD	EECE	5140	Electrical & Computer Engineering	Francis College of Engineering	Integrated Power Systems (Formerly 16.414/514)	Power System Operations and Electricity Markets provide a comprehensive overview to understand and meet the challenges of the new competitive highly deregulated power industry. The course presents new methods for power systems operations in a unified integrated framework combining the business and technical aspects of the restructured power industry. An outlook on power policy models, regulation, reliability, and economics is attentively reviewed. The course lay the groundwork for the coming era of unbundling, open access,, power marketing, self-generation, and regional transmission operations.	Focused	Course focuses on the power industry and exploring ways to make it more efficient and beneficial to the economy and environment.
GRAD	ENVI	5200	Environmental Science	Kennedy College of Sciences	Methods in Environmental Impact Assessment and Analysis (Formerly 87.520)	This course describes, and illustrates with case studies, environmental evaluation required to implement projects and policies potentially affecting the environment. Methods available to integrate technical impact predictions, prepare Environmental Statements, and make informed decisions regarding environmental effects will be covered. Incorporation of sustainability and permitting with environmental analyses will also be examined.	Focused	Course is focused on environmental evaluation of projects and policies and methods to make informed environmental decisions and conduct sustainability analyses.
GRAD	57	513	#N/A	#N/A	Foundations Of Comparative Regional Development	This course offers an initial grounding in economic, historical, political, and sociological methodologies and introduces discipline-based and interdisciplinary approaches to regional development. It introduces students to: identifying and assessing structural factors influencing regional development, defining regional development challenges, and generating problem-solving strategies and public policies. The course highlights the relationship between theory and application, and looks at development at the community, national, and international levels. It makes extensive use of case materials on regional development, including a unit on the development of the Massachusetts economy. Students will learn how to find, prepare and analyze data on regional economies and will learn several basic quantitative tools for regional analysis.	Focused	Course examines the relationship between development and the economic, social, and environmental dynamics of sustainability.
GRAD	PLAS	5960	Plastics Engineering	Francis College of Engineering	Plastics, Elastomers and Additives from Renewable Resources (Formerly 26.596)	This course will provide and introduction to plastics, elastomers and additives obtained from renewable resources. Processes that involve conversion (chemically/enzmatically) of naturally occurring precursors (monomers) obtained from renewable resources to plastics and elastomers will be reviewed. Brief discussion of processing, degradation and recycling of these materials will also be included.	Focused	This course focuses on plastics, elastomers and additives from renewable resources and the process of degradation and recycling of these materials.
GRAD	GEOL	5240	Geoscience	Kennedy College of Sciences	Regional Hydrogeology (Formerly 89.524)	Concentrating on the storage and steady state flow of ground water at a basin-wide scale, thecourse studies flow nets, fluid potential, and numerical modeling of flow controlled by basingeometry and geology; water movement in the zone of aeration, the interaction of groundwaterwith surface water, the transport and dispersion of contaminants, and the use of modeling forgroundwater management.	Focused	Interaction of water and geologic materials; surface and groundwater; quantitative analysis and geologic effects on quality and flow of groundwater.
GRAD	MECH	5210	Mechanical Engineering	Francis College of Engineering	Solar Fundamentals (Formerly 22.521)	Utilization Terrestrial irradiation on tilted surfaces; radiation, conduction, convection in collectors; absorptance, emittance, reflection, transmittance of solar irradiation; energy flow in flat plate and concentrator collectors; storage; design tools; small project; web-based.	Focused	Course focuses on the science and application of solar energy to sustainability.
GRAD	MECH	5270	Mechanical Engineering	Francis College of Engineering	Solar Energy Engineering (Formerly 22.527)	Systems engineering, stochastic modeling, design, and life-cycle cost analysis of several solar systems: photovoltaics, passive heating, solar cooling, and daylighting; Web Based.	Focused	Course focuses on the engineering aspect of solar energy.

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GRAD	ATMO	5100	Atmospheric Science	Kennedy College of Sciences	Regional Weather and Climate Modeling (Formerly 85.510)	Mesoscale atmospheric dynamics and regional climate dynamics. Application of regional weather and climate model to regional weather, climate modeling and forecast problems. Multi-scale physical processes, such as mesoscale and convective-scale phenomena, low-level jets, mountain waves and orographic precipitation, land/sea breezes, cyclones etc., will be discussed in order to understand the linkage between regional weather and climate.	Focused	Course integrates climate aspect of sustainability via application of regional weather and climate models and the linkage between the two.
GRAD	BIOL	5160	Biological Science	Kennedy College of Sciences	Climate Change: Science, Communication, and Solutions (Formerly 81.516)	Climate change offers one of the greatest challenges yet faced by society and scientists. The scientific consensus is clear that climate change is occurring, its pace is accelerating, its impacts on human society will be largely negative, and it is largely caused by anthropogenic greenhouse gas emissions. Yet, despite strong scientific evidence for the enormous challenges that society may face, scientists' attempts to disseminate that evidence beyond their peers have not yet been successful. Indeed in today's media world of blogs, YouTube video clips, and sound-bites, confusion over the scientific reality of climate change frequently dominates the discourse in classrooms and communities. This course will provide students with the tools and knowledge that they need to develop their own well-informed view of climate change. Because climate change is both impacted by humans and will increasingly impact society, this course takes a cross-disciplinary approach, integrating science, policy solutions, and media literacy as they relate to climate change.	Focused	Course integrates the scientific, social, political and media aspects of climate change an its impact on human society.
GRAD	EECE	5250	Electrical & Computer Engineering	Francis College of Engineering	Power Distribution Systems (Formerly 16.525)	An intermediate course in analysis and operation of electrical power distribution systems using applied calculus and matrix algebra. Topics include electrical loads characteristics, modeling , metering, customer billing, voltage regulation, voltage levels, and power factor correction. The design and operation of the power distribution system components will be introduced: distribution transformers, distribution substation, distribution networks, and distribution equipment.	Focused	Course focuses on distributed power systems and their functionality.
GRAD	EECE	5280	Electrical & Computer Engineering	Francis College of Engineering	Alternate Energy Sources (Formerly 16.528)	PV conversion, cell efficiency, cell response, systems and applications. Wind Energy conversion systems: Wind and its characteristics; aerodynamic theory of windmills; wind turbines and generators; wind farms; siting of windmills. Other alternative energy sources: Tidal energy, wave energy, ocean thermal energy conversion, geothermal energy, solar thermal power, satellite power, biofuels. Energy storage: Batteries, fuel cells, hydro pump storage, flywheels, compressed air.	Focused	Course explores alternative energy sources compared to conventional electricity. New and clean energy ensure a sustainable industry.
GRAD	EECE	5290	Electrical & Computer Engineering	Francis College of Engineering	Electric Vehicle Technology (Formerly 16.529)	Electric vehicle VS internal combustion engine vehicle. Electric vehicle (EV) saves the environment. EV design, EV motors, EV batteries, EV battery chargers and charging algorithms, EV instrumentation and EV wiring diagram. Hybrid electric vehicles. Fuel cells. Fuel cell electric vehicles. The course includes independent work.	Focused	Course focuses on the application of electrical vehicles in the market and the positive impact on the environment.
GRAD	PLAS	5470	Plastics Engineering	Francis College of Engineering	Materials for Renewable Energy and Sustainability (Formerly 26.547)	This course reviews the selection and design of materials for use in energy generation and conservation applications. Both traditional and renewable technologies for energy generation are reviewed, and the differences in materials needs for generation, storage and transmission highlighted. Particular emphasis is placed on organic and polymeric materials technological challenges in solar, wind and hydro/geothermal energy and future transportation fuel production. The concept of life cycle assessment is introduced for the optimization of systems from a materials science perspective. The impacts of global economics, ethics and efficiency are also addressed. The course approaches sustainability as an open-ended, complex engineering problem and introduces students to the broad range of career opportunities for materials engineers in renewable energy.	Focused	Class focuses on the materials used in the energy sector. An understanding of traditional and renewable technologies related to sustainability.

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GRAD	MECH	5250	Mechanical Engineering	Francis College of Engineering	Grid-Connected Solar Electric Systems (Formerly 22.525)	Students will study the concepts and design considerations of grid-connected, solar-powered, electrical generation systems, from residential through utility scale. Emphasis will be on practical applications that help make the student ""work ready"" at graduation. Grading consists of two tests during semester; one individual project (residential scale PV system); and one group project (commercial-scale system). This course fulfills an elective requirement for renewable energy students.	Focused	Course focuses on the concepts and design considerations of electrical generation systems including solar generation.
GRAD	MECH	5040	Mechanical Engineering	Francis College of Engineering	Energy Engineering Workshop (Formerly 22.504)	A group design of an innovative energy system. Integration of many aspects of the student's engineering background, including design concepts, technical analyses, economic and safety considerations. Ideally the whole design cycle of design, build, test. A formal report and oral presentation.	Focused	Course focuses on the design of innovative energy systems including economic and safety considerations.
GRAD	MECH	5580	Mechanical Engineering	Francis College of Engineering	Aero/Wind Eng (Formerly 22.558)	This course will introduce and examine classical and modern theoretical and computational two and three dimensional aerodynamics and aeroelastic modeling with applications in wind and subsonic aero/hydrodynamics applications. In addition, wind and meteorological science as well as simple FEM structural modeling and coupling concepts will be examined. The class will comprise scheduled lectures and discussions. Students will be expected to perform presentations and directed projects which involve computer programming.	Focused	Course focuses on the engineering aspect of renewable wind energy.
GRAD	PUBH	5061	Public Health	College of Health Sciences	Introduction to Environmental Health (Formerly 19.506)	This course will survey the rapidly growing field of environmental health through an introduction to the links between human activities and environmental systems and how these interactions can impact the sustainability of ecosystems and human/public health. The course will explore human and industrial activities that impact the environment and result in human diseases such as population, food production, air and water pollution, waste, the built environment, toxic substances, pest control, and global climate change. Understanding the links between human activities and environmental systems is essential to developing effective prevention strategies and building sustainable communities	Focused	Course focuses on the dynamics of sustainability within communities and globally in relation to the field of environmental health.
GRAD	BIOL	5230	Biological Science	Kennedy College of Sciences	Biology of Global Change (Formerly 81.523)		Focused	Course provides an understanding of how elements and molecular compounds interact with Earth's natural resources and how these affect Earth's habitability now and in the future.
GRAD	ATMO	5080	Atmospheric Science	Kennedy College of Sciences	The Climate System (Formerly 85.508)	The main elements of the Climate System are the atmosphere, ocean, biosphere, land surface, and the cryosphere; the primary input of energy is from the Sun. This course examines these elements, the ways in which they interact and how they can be modeled. The Global Energy Budget is examined and both natural and human-caused climate change are considered.	Focused	The main elements of our Climate System are examined in order to understand how they interact and impact the climate system including human caused climate change.
GRAD	CIVE	5680	Civil Engineering	Francis College of Engineering	Environmental Fate and Transport (Formerly 14.568)	The fate of contaminants in the environment is controlled by transport processes within a single medium and between media. The similarities in contaminant dispersion within air, surface water and groundwater will be emphasized. Interphase transport processes such as volatilization and adsorption will then be considered from an equilibrium perspective followed by the kinetics of mass transfer across environmental interfaces. A professional presentation of a select paper or group of paper concerning a course topic is required.	Focused	Course integrates the environmental aspects of sustainability related to the fate and transport of environmental contaminants.
GRAD	CIVE	5730	Civil Engineering	Francis College of Engineering	Solid Waste Engineering (Formerly 14.573)	Characterization, handling and disposal of municipal, industrial and hazardous wastes. Technologies such as landfills, recycling, incineration and composting are examined. A term paper and professional presentation in class regarding a relevant topic is required.	Focused	Course integrates the environmental aspects of sustainability related to solid and hazardous waste management systems and techniques.
GRAD	CIVE	5790	Civil Engineering	Francis College of Engineering	Green and Sustainable Civil Engineering (Formerly 14.579)	This course focuses on various green and sustainable materials and technologies applicable to five areas of civil engineering: environmental engineering, water resources engineering, structural engineering, transportation engineering, and geotechnical engineering. This course also covers current green building laws and introduces fundamentals of entrepreneurship and patent/copyright laws.	Focused	Course focuses on green and sustainable materials and technologies in engineering including green building laws.

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GRAD	EECE	5260	Electrical & Computer Engineering	Francis College of Engineering	Power Systems Stability and Control (Formerly 16.426/526)	Stability definition and cases in power systems. System model for machine angle stability. Small signal and transient stability. Voltage stability phenomenon, its characterization. Small and large signal models for voltage stability analysis. Frequency stability and control. Compensation methods for system voltage regulation including classical and modem methods. Stability of multi-machine system.	Focused	Course examines power system efficiency and its role in sustainability.
GRAD	ENGY	5040	Chemical Engineering	Francis College of Engineering	Energy Engineering Workshop (Formerly 24.504)	A group/individual design project. The design effort will integrate many aspects of the student's engineering background, including design concepts, technical analyses, economic and safety considerations, etc. A formal report and oral presentation are required.	Focused	Course incorporates economic and environment/safety aspects of energy engineering.
GRAD	ENVE	5010	Environmental Engineering	Francis College of Engineering	Wetlands Ecology (Formerly 18.501)	Types, characteristics and definitions, functions and values, regulation and management of wetlands; with due regard given to geology, soils and hydrology, and biological/ecosystem interactions.	Focused	Course focuses on regulation and management of wetlands and the importance of this ecosystem to our environment.
GRAD	ENVE	5810	Environmental Engineering	Francis College of Engineering	Understanding Massachusetts Contingency Plan (Formerly 18.581)	The Massachusetts Contingency Plan (MCP) is a body of regulations designed to streamline and accelerate the assessment and cleanup of releases of oil and hazardous materials to the environment. This course serves as an introduction to the MCP and will explore the intent and use of key aspects of this working document. Though primarily a regulatory course, some topics to be covered are technical by nature. Prerequisites: None. Though not required, some familiarity with relevant environmental science and/or engineering principles is desirable.	Focused	Course focuses on Massachusetts' regulatory approach to streamlining and accelerating assessment and cleanup of oil and hazardous materials releases to the environment.
GRAD	ENVI	5720	Environmental Science	Kennedy College of Sciences	Energy and Environment (Formerly 87.572)	This course discusses the world and U.S. primary energy resources and consumption, including fossil, nuclear and renewable energy sources. Principles of thermodynamics are reviewed, especially in regard to energy usage efficiency improvement. A significant part of the course is devoted to electricity production, including site visits to fossil and nuclear power plants. The environmental effects are discussed of energy extraction and consumption, such as SOx, NOx and particulate matter emissions, acid deposition, the greenhouse effect, radioactive waste disposal. Also the risks of accidents are discussed in fossil and nuclear fuel usage.	Focused	Course focuses the use and production of energy the United States, with an emphasis on environmental impact and regulation.
GRAD	ENVI	5850	Environmental Science	Kennedy College of Sciences	Climate Change in the Classroom (Formerly 87.585)	The course is designed to help teachers from all levels improve their ability to foster student learning about the earth's changing climate. The course addresses the scientific, sociological, and pedagogical dimensions associated with climate change science. How to incorporate climate change into existing curriculum across disciplines is considered.	Focused	Course explores the dynamics of climate change ranging from scientific to social changes.
GRAD	GEOL	5010	Geoscience	Kennedy College of Sciences	Paleoclimatology (Formerly 89.501)	This course provides students with an overview of paleoclimatology by examining the use of proxy records, such as marine and lake sediment sequences, ice cores, tree rings, corals and historical data to reconstruct past climatic conditions. Dating methods will be introduced. Throughout, we will critically analyze our understanding of past climates and environments and identify directions for future research. Topics include: abrupt climate change, human evolution and climate, biosphere-climate interactions and paleoclimate modeling.	Focused	Course is focused on climate change and biosphere-climate interactions and explores historical data to reconstruct past climatic conditions.
GRAD	GEOL	5410	Geoscience	Kennedy College of Sciences	Environmental and Engineering Geology (Formerly 89.341/541)	Fundamentals of geology applied to environmental and engineering problems. Topics include minerals and rocks, soil properties, rock mechanics, active tectonics and earthquake hazards, slope stability and landslides, groundwater, rivers and flood hazards, coastal processes, and site assessment. Student project.	Focused	Course applies geology to the study of environmental and engineering problems facing the Earth.
GRAD	MECH	5280	Mechanical Engineering	Francis College of Engineering	Photovoltaics Manufacturing (Formerly 22.528)	Overview of the manufacturing processes used to make a typical crystalline solar cell. Detailed study of selected processes and manufacturing problems, such as solar cell testing, characterization, reliability issues, factors affecting yields, automated material handling, affect of impurities in crystal growth.	Focused	Course relates to the eco-environmental dynamic of sustainability.

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GRAD	MECH	5320	Mechanical Engineering	Francis College of Engineering	Off-Grid Solar Electric System (Formerly 22.532)	This course examines the technical, financial and societal aspects of photovoltaic (PV) systems that are not connected to the electrical grid. Topics include: reasons for going off the grid, the components of an off-grid PV system, how to size a PV system to meet the required load, site impacts on performance, determining the loss of load probability (LOLP) for a system, hybrid systems, e.g. solar plus a generator, energy storage solutions, regulatory issues, and cost. Systems sized to meet the annual load requirements of a remote communication system, a net-zero home, and a small village will be examined. HOMERMicrogrid, PVWatts, and other software will be used to design these systems.	Focused	Course integrates technical, financial and societal aspects of PV systems not connected to the electrical grid.
GRAD	MKTG	6150	Marketing	Manning School of Business	Sustainable Marketing (Formerly MKTG 615/62.615)		Focused	Course integrates political, social and cultural aspects of sustainable marketing.
GRAD	PCST	5270	Peace and Conflict Studies	College of Fine Arts, Humanities and Social Sciences	Sustainable Housing Development and Land Use: Conflict, Policy, and Practice (Formerly PCS 527)	Housing is fundamental to the quality of life in communities, and housing conflict, policy and practice shape the availability of this fundamental good. This course will examine the economic, environmental, social, and cultural factors that shape housing and its sustainability. The contentious nature of housing and land use policy in the United States will be summarized, with students learning how housing policy impacts communities, states, and regions. The course will then give students a detailed understanding of the conflictive process through which housing is developed and the role the market, government, funders, workers, and housing consumers play in influencing the creation and development of housing. The course will highlight ways in which current housing development policy and practices are not sustainable, and will examine more recent efforts to establish standards and practices that enhance consensus and sustainability. Students will learn how to manage conflict and take a housing project through the various stages, such as project conceptualization, market analysis, design, site acquisition, financing, construction, and occupancy. While the course focuses on the U.S. context, students will learn of international efforts to achieve greater sustainability in housing. The course will provide students with both practical and theoretical knowledge of housing and land use conflict, policy and development practices. Case studies of actual projects will be presented.	Focused	Course focuses on the socio-economic, environmental and cultural aspects of sustainability, specifically associated with sustainable housing development.
GRAD	PUBH	5490	Work Environment	College of Health Sciences	Sustainable Housing Development and Land Use: Policy and Practice (Formerly 19.549)	Housing is fundamental to the quality of life in communities, and housing policies shape the availability of this fundamental good. This course will examine the economic, environmental, social, and cultural factors that shape housing and its sustainability. Overall housing and land use policy in the United States will be summarized, with students learning of the ways in which housing policy impacts communities, states, and regions. The course will then give students a detailed understanding of the process through which housing is developed and the role the market, government, funders, workers, and housing consumers play in influencing the creation and development of housing. The course will highlight the ways in which current housing development policy and practices are not sustainable, and will examine more recent efforts to establish standards and practices that enhance sustainability. Students will learn how to take a housing project through the various stages, such as project conceptualization, market analysis, design, site acquisition, financing, construction, and occupancy. While the course focuses on the U.S. context, students will learn of international efforts to achieve greater sustainability in housing. The course will provide students with both practical and theoretical knowledge of housing and land use policy and development practices. Case studies of actual projects will be presented.	Focused	Course focuses on the dynamics of sustainable housing.
GRAD	PUBH	5500	Work Environment	College of Health Sciences	Environmental Law (Formerly 18/19.527)	The large body of law, which has developed since the early 1960's, is examined in considerable detail. Federal laws relating to the environment, particularly with the Environmental Protection Agency and the Occupational Safety and Health Acts. State and local laws and ordinances are discussed where pertinent.	Focused	Course focuses on the development of environmental laws.

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GRAD	PUBH	5550	Work Environment	College of Health Sciences	Comparative Enviormental (Formerly 19.555)	Human social and productive activities often harm the natural environment. Environmentally related health problems will become more prominent and put additional stress on industrial, as well as transitional and developing nations. A sustainable world is one that provides not only for environmental viability but also economic health, social justice and political participation. This course is designed to explore the dynamics and interactions of social, economic and political factors that aid or impede a community's ability to contribute to global environmental sustainability. The course will be offered in collaboration with the Department of Regional Economic and Social Development as course 57.518.	Focused	Course focuses on human activity that impacts global environmental sustainability.
GRAD	PUBH	5570	Work Environment	College of Health Sciences	Toxic Use Reduction (Formerly 19.557)	Toxic Use Reduction (TUR) is a new approach to hazardous waste management and environmental protection. Rather than addressing chemical contamination as waste (after its generation), to be managed through permits and emission regulations, TUR focuses on chemicals while still in production. In Massachusetts, firms are required to prepare plans demonstrating how they will reduce or eliminate the use of toxic chemicals. The course is organized as a set of discussions and case studies from the real-life program.	Focused	Course focuses on the means to reduce toxins into the environment.
GRAD	PUBH	5674	Work Environment	College of Health Sciences	Water, Sanitation, and Public Health	This course introduces students to the critical role of water and water sanitation in protection of public health. The course will provide an overview of the basics of water treatment systems and the role of local public health professionals in water preservation. Students will be introduced to the importance of water and the global water crisis; the basic principles of water hydrology and the connection between surface and ground water; water chemistry, microbiology and common contaminants in water supplies (nutrients, pathogens, and chemicals); water and waste water treatment and protection systems (including storm-water runoff, pools and beaches), their functioning, regulation, and testing; and the emerging issues in water protection, such as hydrofracking.	Focused	Course focuses on the sanitation of water to public health and incorporates water protection strategies.
GRAD	PUBH	6130	Work Environment	College of Health Sciences	Environmental Epidemiology (Formerly PUBH.613)	An advanced course in modern epidemiologic methods as applied to physical and chemical hazards in the environment. Students read and critique some of the classic studies that have led to recognition of the effects of the environment on health, as well as some current topics of intense and active research. Major topics covered include: air pollution and lung disease, water pollution and infectious disease, ionizing radiation and cancer, outbreak investigation for foodborne infectious agents, lead poisoning, and endocrine disruption. Through reading the literature, students strengthen their skills in study design and analysis, while learning about important aspects of environmental health.	Focused	Course focuses on the negative effects on the public, caused by hazards in the environment.
GRAD	PUBH	6950	Work Environment	College of Health Sciences	Chemical Process/Sustainability (Formerly 19.695)	This course surveys the basis of chemical engineering process design and fundamentals of unit operations. The student will be able to understand the basics of chemical engineering design methods for the purpose of enhancing sustainability of chemical production processes.	Focused	Course focuses on enhancing the sustainability of chemical production processes.
GRAD	RADI	5230	Radiological Sciences	Kennedy College of Sciences	Air Resource Management (Formerly 98.523)		Focused	Managing global commons like air is a critical component of sustainability.
GRAD	RADI	5240	Radiological Sciences	Kennedy College of Sciences	Environmental Health Physics (Formerly 98.524 & 94.424)	Natural and man-made sources of environmental radioactivity and radiation; environmental transport in air, water, and soil; exposure pathways; environmental standards and regulations; environmental monitoring and surveys (MARSSIM); contaminated site characterization, and site remediation; environmental radiological impact of industry, accidents, and natural and man-made disasters.	Focused	Course focuses on environmental radioactivity, transport and standards and regulations.
GRAD	CHEN	5010	10	Chemical Engineering	Paper Industry Processes (Formerly 10.501)	Processes of fiber separation from raw materials, fiber purification and mechanical processing of fiber and sheet formation. Chemical engineering theory is applied to the analysis of these operations.	Related	Course covers paper processing on a chemical level and its relation to sustainable practices.

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GRAD	CHEN	5560	10	Chemical Engineering	Materials for Aerospace and Energy Applications (Formerly 10.556)	Material requirements for emerging applications in aerospace and energy sectors will be discussed. Mechanical, thermal and electrical and barrier properties of filled polymers and polymer nanocomposites will be studied. The effect of resin structure, filler additives, reactive diluents on the resulting properties will be reviewed. Scale-up issues will be studied using basic principles of chemical engineering.	Related	Analysis of applications to the energy sectors will be explored and their relation to the economic dynamic of sustainability.
Grad	MECH	2960	22	Mechanical Engineering - Francis College of Engineering	Materials Science for Engineers (Formerly 22.296)	Properties and characterization of engineering materials. The behavior of engineering materials is studied experimentally to develop an understanding of properties important in materials selection and engineering design. Structure-property-processing relationships are discussed. Topics include stress, strain, strength, stiffness, thermal expansion, hardness, tensile and bending tests, strain gages, corrosion, microstructure of metals, polymers, ceramics and composites.	Related	Course examines the life cycle of materials; specifically, topics covered include theenvironmental effects of material extracaon, the embodied energy in the materials, and their end-of-life disposal.
GRAD	NUTR	5820	35	Nutritional Sciences	Seminar in Advanced Nutrition(Formerly 36.582)	Review and analysis of contemporary research publications in human nutrition. Recently discovered nutrients that may be essential to human health will be evaluated. We will critically examine the benefits of dietary modification in controlled investigations. Course will focus on published studies of the relation of dietary practices to health and disease. We will examine nutrition policy, and the way scientific findings in nutrition translate into public health practice. This course will be of value to students who wish to critically examine literature in human nutrition, and who seek to develop new directions for nutrition research.	Related	Course integrates health and social aspects of sustainability by examining the relationship between dietary practices, human health and public health practice.
GRAD	MIST	7070	63	Operations and Information Systems	Electronic Commerce (Formerly 63.707, MIST 707)	This course provides a foundation on digital commerce and e-business research for PhD. students. It will cover both technological and managerial aspects of managing e-business operations in either a pure (Dot.Com) organization or traditional organization (bricks-and-click). Issues covered include interactive marketing and market-spaces, agent-based commerce and intelligent markets, electronic shopping carts, user interface issues, EDI transaction via Extranets, database interfaces, personalization and targeted communications, security, encryption, and payment systems, privacy and intellectual property. Students will be conducting literature review in each of these key e-business areas and identify potential future research directions.	Related	Course relates to the economic dynamic of sustainability.
GRAD	BIOL	5260	81	Biological Science	Evolutionary Biology (Formerly 81.526)	Lectures deal with the patterns and processes of biological evolution. Covers the history of evolutionary thought, the evidence for evolution, the generation and maintenance of population-level variation, natural selection, adaptation, sexual selection, speciation, phylogenetics, molecular evolution, the fossil record and extinctions. In addition to lecture and textbook material, the course surveys classic and contemporary primary literature from evolutionary biology. A written paper and/or seminar presentation will be required.	Related	Course covers evolutionary biology in relation to human populations.
GRAD	BIOL	5400	81	Biological Science	Advances in Plant Biology (Formerly 81.540)	Topics covered are siilar to those considered in 81.440. However, students are required to complete a more in-depth review of a current research topic in plant biology and will conduct additional reading and writing assignments.	Related	Course examines the role of plant biology in maintaining a sustainable environment.
GRAD	BIOL	5470	81	Biological Science	Evolution in Context for Teachers (Formerly 81.547)	This course empowers life science teachers of all levels with the skills and knowledge to more effectively foster student understanding of evolution by natural selection. By exploring evolution in multiple contexts, the Darwinian framework for how life evolved (and continues to evolve) are presented in an interactive and engaging manner. Teachers learn to use virtual resources to enhance their students learning while digging deep into some of the most profound and interesting science conducted in the last 100 years. Evolution in context makes the science of evolution come alive in a real and relevant manner. From the historical and scientific to the environmental and political, Teachers will learn about evolution in ways they never imagined.	Related	Course provides teachers with the knowledge to teach their students concepts of life science and the correlation to a sustainable environment.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	ATMO	5160	85	Atmospheric Science	Mesoscale Atmospheric Dynamics (Formerly 85.516)	This course is designed for students to apply atmospheric dynamics and physical analysis techniques to mesoscale and convective-scale phenomena, including mesoscale convective systems, severe thunderstorms, tornadoes, dry lines, low-level jets, mountain waves and orographic precipitation, land/sea breezes, boundary layer rolls, and hurricanes. Emphasis will be given to the physical understanding of these processes instead of forecasting.	Related	Course integrates climate aspect of sustainability via physical understanding of the processes that create mesoscale and convective-scale phenomena including severe weather that impact society.
GRAD	ATMO	5030	85	Atmospheric Science	Remote Sensing (Formerly 85.503)	This course is a survey of ground based, balloon, rocket probe, radar and satellite remote sensing techniques. Optical and radio frequency remote sensing techniques are surveyed. The focus is on the determination of physical, chemical and dynamical quantities by remote sensing measurements. The theory is presented used to interpret data obtained by remote sensing techniques. Various inversion methods are discussed used to obtain spatial discrete quantities from line - of - sight observations. Modeling and simulation techniques are described and practiced.	Related	Course integrates the climate aspect of sustainability and evaluates remote sensing instrumentation and weather modeling/simulation techniques.
GRAD	ATMO	5180	85	Atmospheric Science	Forecasting and Synoptic Techniques I (Formerly 85.518)	This is the first of a two-course sequence that provides graduate students a combined theoretical and applied understanding of synoptic-scale meteorology, with an emphasis on forecasting applications. The first course introduces the concepts of vorticity advection and the quasi-geostrophic approximation, and applies them synoptic-scale cyclones, including nor¿easters. The graduate students will learn to use Gempak graphics and will be introduced to the National Weather Service Weather Event Simulator, a combined hardware and software package that simulates the NWS forecast environment.	Related	Course relates synoptic-scale meteorology to weather forecasting and how it impacts us today.
GRAD	ATMO	5190	85	Atmospheric Science	Forecasting and Synoptic Techniques II (Formerly 85.519)	This is the second of a two-course sequence that provides graduate students a combined theoretical and applied understanding of synoptic-scale meteorology, with an emphasis on forecasting applications. This second course builds on the content of the first, extending quasi-geostrophic approximation to Q-vectors and isentropic potential vorticity. The National Weather Service Weather Event Simulator, a combined hardware and software package that stimulates the NWS forecast environment will be used to study case studies that have been programmed for the Simulator. Together with 85.518, this two-course sequence satisfies the NWS certification requirements for analysis and prediction of weather systems.	Related	Course provides an in depth understanding of synoptic-scale meteorology and how accurate forecasting can impact society today.
GRAD	ATMO	5240	85	Atmospheric Science	Simple Atmospheric Models (Formerly 85.524)	The basic wave types and fundamental dynamics of atmospheric motion are considered through analytical and numerical modeling of the main simplifications (models) of the full equations of motion for the atmosphere. These models are derived by making assumptions that greatly simplify the full equations and which isolate individual wave types and specific physical mechanisms. Together, these models describe the basic aspects of atmospheric motion: the maintenance and structure of the jet stream, the genesis and propagation of synoptic storms, and the forced and internal contributions to seasonal patterns of midlatitude climate variability.	Related	Course integrates climate aspect of sustainability via atmospheric modeling in order to understand the fundamental dynamics of atmospheric motion including climate variability.
GRAD	ATMO	5290	85	Atmospheric Science	Advanced Forecasting (Formerly 85.529)	This course builds on the student¿s basic understanding of storm systems and extends their theoretical knowledge to particular weather patterns. Topics include nowcasting, long-range forecasting, snow squalls, sea breeze, and especially deep convection. Particular attention is paid to the structure and development of supercells. Students will also be required to write a special report on a topic assigned by the professor, and present this in class as a special lecture.	Related	Course integrates climate aspect of sustainability via comprehensive analysis of forecasting severe storms that impact populated regions all over the world.
GRAD	ATMO	5400	85	Atmospheric Science	Tropical Meteorology (Formerly 85.540)	An introduction to the tropical atmosphere, including tropical climatology, structure and dynamics of easterly waves, tropical cyclones and monsoon circulations.	Related	Course integrates climate aspect of sustainability via examination of the tropical atmosphere in relation to other regions around the world.
GRAD	ATMO	5810	85	Atmospheric Science	Meteorology for Teachers (Formerly 85.581)	The purpose of this course is to provide the middle school teacher with: a thorough understanding of several key concepts and processes of meteorology; the ability to effectively present meteorology topics that are appropriate for the middle school science classroom; the tools necessary to develop inquiry based lessons for the classroom.	Related	Course integrates climate aspect of sustainability by providing middle school teachers key concepts and processes of meteorology so they can develop inquiry based lessons for the students.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	GEOL	5020	89	Geoscience	Quantitative Gemorphology (Formerly 89.502)	This course follows the path of material as it is weathered form bedrock, moved down hillslopes and transported via glaciers and rivers. Emphasis is on 1) quantifying erosion and sediment transport, 2) applying computer-based models and conservation of mass equations to earth surface processes and 3) understanding long-term landform evolution.	Related	Course discusses the landform evolution of Earth over millions of years.
GRAD	GEOL	5060L	89	Geoscience	Igneous and Metamorphic Petrology Laboratory (Formerly 89.506)	Identification and classification of igneous and metamorphic rocks. Emphasis is on thin section identification and use of rock textures and compositions as guides to petrogenesis.	Related	Course relates to materials that change and make up the Earth's surface.
GRAD	GEOL	5100	89	Geoscience	Glacial and Pleistocene Geology (Formerly 89.510)	A survey and interpretation of the erosional and depositional effects of glaciation with emphasis on the New England area. Topics include glaciology, glacial geology, and Pleistocene stratigraphy.	Related	Course examines the movement of glaciers over millions of years and how they shape the environment we live in today.
GRAD	GEOL	5310	89	Geoscience	Isotopes in Environmental and Geosciences (Formerly 89.531)	The course will show how radioactive and stable isotopes can be used to understand environmental and geological systems. Topics to be covered include radiometric dating using short and long half-life isotopes, radiogenic isotopic tracers, and stable isotopes.	Related	Radioactive isotopes are examined to better understand environmental and geological systems.
GRAD	GEOL	5520	89	Geoscience	Sedimentation & Stratigraphy (Formerly 89.552)	Principles and processes of sedimentation: erosion, mechanics of transport, diagenesis and lithification, models for sedimentary environments. Development of the stratigraphic record, relative and absolute time, and seismic stratigraphy.	Related	Course relates to the factors that change the Earth's physical and environmental properties over long periods of time.
GRAD	GEOL	5540L	89	Geoscience	Sedimentation and Stratigraphy Laboratory (Formerly 89.554)	Determination of mass properties of sediments with emphasis on mechanical and statistical analysis, identification and description of sedimentary rocks, facies models and stratigraphic cross-sections.	Related	Course relates to the factors that change the Earth's physical and environmental properties over long periods of time.
GRAD	GEOL	5560	89	Geoscience	Applied Geophysics (Formerly 89.556)	Application of geophysics to problems in geology and environmental science. Principles and techniques of gravity, magnetic, electrical, and seismic methods. Field projects and surveys.	Related	Course applies fundamentals of geophysics to problems in geology and environmental science.
GRAD	GEOL	5850	89	Geoscience	Oceanography for Teachers (Formerly 89.585)	This course will introduce students to basic oceanographic principles and processes. Content will be linked to National and State Science Standards. Students will create a number of oceanography-based lessons linked to the standards. Pedagogy will be modeled in relation to teacher instruction and student learning.	Related	Course examines the relationship between the dynamics of the Earths' oceans the changing environment.
GRAD	EDUC	6300	42378	Education	Educating Diverse Populations (Formerly 01.630)	As the world becomes increasingly diverse, educators must be prepared to examine, confront, and manage the factors that affect the education of all children. This course addresses several central issues focusing on how teachers address the problems that confront students who differ from the majority population in language, ethnicity, culture, gender, and sexual orientation. Ensuring that their families and communities are actively involved in the educational process is also an important component of the course.	Related	Course examines the need for skilled educators to confront the challenge of educating diverse populations, taking into account the cultural and social aspects of sustainability.
GRAD	EDUC	5010	42378	Education	Teaching Diverse Populations (Formerly 01.501)	Students examine, confront and learn to manage the challenge of successfully educating all children, regardless of racial, cultural, linguistic, gender or physical differences.	Related	This course integrates the social aspects of sustainability by addressing racial, cultural, and gender differences in teaching diverse populations.
GRAD	EDUC	6320	42378	Education	The Inclusive School (Formerly 01.632)	School leaders must create environments that are welcoming to all students and their families and that capitalize on the strengths students bring to the learning environment as well as address the needs of students. As the population of students in our schools has continued to become more diverse, building an inclusive environment in which all are valued and in which all student can succeed has become increasingly complex. Participants in this course will explore their values and beliefs as well as the dominant culture and prevailing belief systems present in the majority of today's public schools. Participants will learn about ways in which many students, their families, and their communities may differ from this dominant culture, and the possible effects of this mismatch. Through readings and interactive discussions, participants will examine ways to build a school culture that is inclusive for all students and their families. Participants will develop detailed plans of action to actively and meaningfully involve parents and community members in all aspects of the school.	Related	Course addresses the learning environments for diverse populations of students and the need for skilled educators to bridge the cultural and social gaps.

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GRAD	EDUC	6360	42378	Education	Sociocultural Contexts of Educational Communities (Formerly 01.636)	Examines the social, cultural, and political forces that shape the school environment and provide context for teaching and learning. Additionally, the types of existing and desired relationships among schools, families and communities will be discussed.	Related	Course examines schooling through a social lens of sustainability.
GRAD	EDUC	5030	42378	Education	Understanding Child Development in a Diverse Society (Formerly 01.503)	Examines the major theoretical frameworks of child development and how cultural differences affect development and learning. Focus is on helping students make responsive and culturally relevant pedagogical decisions.	Related	Course integrates the social aspects of sustainability by examining how cultural differences affect development and learning.
GRAD	EDUC	5170	42378	Education	Community Organization and Parental Partnership (Formerly 02.517)	The aim is to prepare school personnel to work effectively with community groups and bilingual parent organization.	Related	Course integrates social aspect of sustainability by preparing school personnel to work with community and bilingual groups.
GRAD	EDUC	5300	42378	Education	Interactions and Assessment in Science (Formerly 04.530)	This course examines the ways in which students interact and learn in the science classroom. Construction of a Science, Technology, and Society (STS) unit plan, as well as the development of assessment tools that align to lesson and unit goals are key features of this course.	Related	Course relates the progress of science and technology to sustainability.
GRAD	EDUC	5540	42378	Education	Creation of a Nation (Formerly 04.554)	This course will focus on the meeting of three worlds: Africa, Europe and the Americas and will explore the cultural and ecological interactions.	Related	Course integrates the social and environmental aspects of sustainability be examining the cultural and ecological interactions of certain regions of the world.
GRAD	EDUC	5580	42378	Education	Becoming A Nation (Formerly 04.558)	This course looks at the westward expansion of the United States from the signing of the Constitution to the pre-Civil War period.	Related	Course examines the dynamics of U.S westward expansion through a economic and social context.
GRAD	EDUC	6370	42378	Education	History & Theory of Curriculum (Formerly 04.637)	This course examines the historical development of American curriculum from the colonial period to the present, with a focus on theories that shaped what was taught in schools, and how those theories reflected social, cultural and political values and conflicts. Particular attention will be paid to curriculum theories that have shaped contemporary curriculum, and to examination of programs that reflect those theories.	Related	Course integrates social aspects of sustainability by evaluating how social, cultural and political values and conflicts have affected the development of history curriculum.
GRAD	EDUC	6740	42378	Education	Research into Learning in Science (Formerly 04.674)	In this course, we shall be reading research articles and examining how the research was carried out. You will conduct an ""action research"" project. Those who engage in action research have a commitment to bring about change. In this case, you will be investigating something in your own classroom or school that concerns you and therefore the results of your research will help you to think about what might be done to change the situation. Through the collection and sorting of data we can gain insights into situations that were previously muddy. Teachers often have to make judgments based on experience, but this is not persuasive to outsiders. With data we can convince others that the course of action we choose is justified.	Related	Course encourages active and engaged living laboratory learning problems in ones school.
GRAD	EDUC	6750	42378	Education	Leadership in Science Education (Formerly 04.675)	There are many issues in science education that can be clarified as a result of reading current literature and engaging in discussion with other teachers. In this course, we will examine some of the most pressing issues that face us as science teachers e.g. What is science literacy? What role should inquiry play in a science curriculum? What is the role of technology in science education? Is ability grouping approproate for learning in science? Each week we will examine a different issue and share our expertise, as we explore what it means to be a leader in science education. You will share your own science teaching expertise by developing an article to be submitted to an NSTA publiction via a peer review process. Additionally, you will put your progam learning into practice and will be assessed through written evidence captured in a professional portfolio.	Related	Course relates science education and sustainability.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	EDUC	6751	42378	Education	History, Theory, & Contemporary Issues in Lang, Literacy & Culture (Formerly 06.675)	The purpose of this course is to engage students in the complexities and debates regarding theoretical perspectives and research on language, literacy, and culture that have affected language and literacy learning. This course will begin with introduction to the history of research done on concepts of language, literacy and culture. Students then look at the evolution of sociolinguistic and stenographic research language, literacy and culture as well as other modes of inquiry on language and literacies. Most of the course is spent closely examining studies for how they conceptualize the mutual construction of language, literacy, and culture, and for what they can tell use about the nature of literacy learning. In addition, students will explore the questions those studies raise such as cultural diversity,identity, learning, curriculum and instruction school-community relationships and social justice in literacy and language learning.	Related	Course relates to the social dynamics of sustainability, specifically language, literacy, and culture.
GRAD	EDUC	6760	42378	Education	Exploring the Nature of Science (Formerly 06.676)	If you were asked to describe the characteristics of science what would you say and would you know whether professional scientists agree with you? National professional societies such as the NSTA and the AAAS, believe that if middle and high school students understand how science has been and is practiced, they will be more likely to question their own thinking, recognize the power of scientific theories and understand that there are no absolute truths. This course will take you on an exploration of some fascinating discoveries in the history of science, engage you in debate about controversial issues in science, and involve you in raising your own scientific questions.	Related	Course examines how students interpret science and encourages them to think abstractly about known truths.
GRAD	EDUC	6800	42378	Education	Leadership of Community Engagement I (Formerly 05.680)	This course will examine the intricacy of community engagement. Parent and community engagement in education is widely recognized as important, yet very few teacher leaders are taught how to foster engagement more broadly and deeply in schools. Teachers will learn community-based relational approach and other theories related to parent and community engagement. Through action plans, they will create opportunities for community partnerships necessary for promoting the success of all students.	Related	Course integrates social aspect of sustainability and focuses on community-school partnerships.
GRAD	EDUC	6810	42378	Education	Leadership of Community Engagement II (Formerly 05.681)	In this course, students will implement and evaluate their community engagement action plan from Leadership of Community Engagement I. Students will begin to unravel and document best practices seminal to community and school partnerships. Through the sharing of important resources such as social networks and community capital. Teachers will create a learning community to support each other and colleagues engaged in this important work.	Related	Course integrates social aspect of sustainability and focuses on community-school partnerships.
GRAD	EDUC	6910	42378	Education	Developing Inclusive School Contexts (Formerly 05.691)	This course will introduce students to theory and research about structural inequities, barriers to education, and promising practices for addressing these barriers. Students will examine theory and research and implications for practice in PK-12 Leadership.	Related	Course integrates the social aspects of sustainability by examining inequities and barriers to education.
GRAD	CIVE	5620	14	Civil Engineering	Physical and Chemical Hydrology Geology (Formerly 14.562)	Well hydraulics for the analysis of groundwater movement. A review of the processes of diffusion, dispersion, sorption, and retardation as related to the fate and transport of organic contaminants in groundwater systems. Factors influencing multi-dimensional contaminant plume formation and migration are addressed. It is the goal of this course to provide environmental scientists and engineers with the technical skills required to understand groundwater hydrology and contaminant transport within aquifers. A term paper and professional presentation in class regarding a relevant topic is required.	Related	Course integrates the environmental aspects of sustainability related to hydraulic engineering including focus on environmental contaminant transport within aquifers.
GRAD	CIVE	5950	14	Civil Engineering	Hazardous Waste Site Remediation (Formerly 14.595)	This course focuses on the principles of hazardous waste site remediation (with an emphasis on organic contaminants) using physical, chemical or biological remediation technologies. Both established and emerging remediation technologies including: bioremediation, intrinsic remediation, soil vapor extraction (SVE), in situ air sparging (IAS), vacuum- enhanced recovery (VER), application of surfactants for enhanced in situ soil washing, hydraulic and pneumatic fracturing, electrokinetics, in situ reactive walls, phytoremediation, and in situ oxidation, will be addressed. A term paper and professional presentation in class regarding a relevant topic is required.	Related	Course integrates the environmental aspects of sustainability related to hazardous waste site remediation technologies.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	CIVE	5340	14	Civil Engineering	Soil Dynamics and Earthquake Engineering (Formerly 14.534)	This course addresses the dynamic properties of soils and basic mechanical theory of dynamic response. It will apply these results to analysis and design of dynamically loaded foundations. A basic understanding of earthquakes - where they occur, their quantitate description, how the complicated patterns of motions are captured by techniques such as the response spectrum, and how engineers design facilities to withstand earthquakes, will be addressed. In particular, the course will consider three topics of current professional and research interest: probabilistic seismic hazard analysis (PHSA), soil liquefaction, and seismically induced displacements. The emphasis will be on geotechnical issues, but some time will be devoted to structural considerations in earthquake resistant design.	Related	Course offers an analysis of the relationship between properties of soil and earthquakes in a eco-sustainable way.
GRAD	CIVE	5390	14	Civil Engineering	Ground Improvement (Formerly 14.539)	Design and construction methods for strengthening the properties and behavior of soils. Highway embankments, soil nailing, soil grouting, landslide investigation and mitigation, dynamic compaction, stone columns.	Related	Course examines soil in an environmental and economic way.
GRAD	CIVE	5640	14	Civil Engineering	Hydrology & Hydraulics (Formerly 14.564)	This course utilizes engineering principles to quantitatively describe the movement of water in natural and manmade environmental systems. Topics include: hydrologic cycle, steam flow and hydrographs, flood routing, watershed modeling, subsurface hydrology, and probability concepts in hydrology, hydraulic structures, flow in closed conduits, pumps, open channel flow, elements of storm and sanitary sewer design will be addressed.	Related	Course integrates the environmental aspects of sustainability related to water resources and environmental engineering.
GRAD	CIVE	5810	14	Civil Engineering	Engineering Systems Analysis (Formerly 14.581)	The course presents advanced methods of operations research, management science and economic analysis that are used in the design, planning and management of engineering systems. Main topics covered, include: the systems analysis methodology, optimization concepts, mathematical programming techniques, Network analysis and design, project planning and scheduling, decision analysis, queuing systems, simulation methods, economic evaluation. The examples and problems presented in the course illustrate how the analysis methods are used in a variety of systems applications, such as: civil engineering, environmental systems, transportation systems, construction management, water resources, urban development, etc.	Related	Course integrates the economic and social responsibility aspects of sustainability in engineering systems.
GRAD	CIVE	5480	14	Civil Engineering	Traffic Management and Control (Formerly 14.548)	The course presents modern methods of traffic management, traffic control strategies and traffic control systems technology. Main topics covered, include: transportation systems management (TSM); traffic control systems technology; control concepts - urban and suburban streets; control and management concepts - freeways; control and management concepts - integrated systems; traveler information systems; system selection, design and implementation; systems management; ITS plans and programs. The course will also include exercises in the use and application of traffic simulation and optimization models such as: CORSIM, TRANSYT and MAXBAND/ MULTIBAND.	Related	Course relates to practices considered in traffic management in order to make it as efficient as possible.
GRAD	CIVE	5610	14	Civil Engineering	Physical Chemical Treatment Processes (Formerly 14.561)	Course provides a theoretical understanding of various chemical and physical unit operations, with direct application of these operations to the design and operation of water and wastewater treatment processes. Topics include colloid destabilization, flocculation, softening, precipitation, neutralization, aeration and gas transfer, packed & tray towers, oxidation, disinfection, reverse osmosis, ultrafiltration, settlings, activated carbon adsorption, ion exchange, and filtration.	Related	Course integrates the environmental aspects of sustainability related to water and wastewater treatment facility design.
GRAD	CIVE	5670	14	Civil Engineering	Environmental Aquatic Chemistry (Formerly 14.567)	This course provides environmental understanding of the principles of aquatic chemistry and equilibria as they apply to environmental systems including natural waters, wastewater and treated waters.	Related	Course integrates the environmental aspects of sustainability related to environmental aquatic chemistry.
GRAD	CIVE	5780	14	Civil Engineering	Biological Wastewater Treatment (Formerly 14.578)	Course covers the theoretical and practical aspects of biological wastewater treatment operations. Topics include kinetics of biological growth and substrate utilization, materials balance in chemostats and plug flow reactors, activated sludge process analysis and design, sedimentation and thickening, nitrification and denitrification, phosphorus removal, fixed-film processes analysis and design, anaerobic processes analysis and design, aerated lagoons and stabilization ponds, and natural treatment systems.	Related	Course integrates the environmental aspects of sustainability related to biological wastewater treatment.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	CIVE	5110	14	Civil Engineering	Inspection and Monitoring of Civil Infrastructure (Formerly 14.511)	In this course, principles and applications of inspection and monitoring techniques for the condition assessment of aged/damaged/deteriorated civil infrastructure systems such as buildings, bridges, and pipelines, are introduced. Current nondestructive testing/evaluation (NDT/E) methods including optical, acopustic/ultrasonic, thermal, magenetic/electrical, radiographic, microwave/radar techniques are addressed with a consideration of their theoretical background. Wired and wireless structural health monitoring (SHM) systems for civil infrastructure are also covered. Applications using inspection and monitoring techniques are discussed with practical issues in each application.	Related	Course relates the dimensions of civil engineering to sustainable progress.
GRAD	CIVE	5120	14	Civil Engineering	Structural Stability (Formerly 14.512)	This course provides a concise introduction to the principles and applications of structural stability for their practical use in the design of steel frame structures. Concepts of elastic and plastic theories are introduced. Stability problems of structural members including columns, beam-columns, rigid frames, and beams are studied. Approaches in evaluating stability problems, including energy and numerical methods, are also addressed.	Related	Relates to the economic dimension of sustainability and evaluates real life structural problems.
GRAD	CIVE	5290	14	Civil Engineering	Engineering with Geosynthetics (Formerly 14.529)	Rigorous treatment in the mechanism and behavior of reinforced soil materials. Laboratory and insitu tests for determining the engineering properties of geosynthetics (geotextiles, geomembranes, geogrids and geocomposites). Design principles and examples of geosynthetics for separation, soil reinforcement and stabilization, filtration and drainage.	Related	Course examines the elements and role of soil in an eco-sustainable way.
GRAD	CIVE	5300	14	Civil Engineering	Driven Deep Foundations (Formerly 14.530)	design and analyses of driven deep foundations including: Deep foundations classification and historical perspective. Effects of pile installation. Static capacity and settlement analysis of a single pile and a pile group under vertical loads. Insight of pile resistance including soil behavior and interfacial friction. Driven pile load test standards, construction, interpretation, and simulation. Dynamic analysis of driven piles, the wave equation analysis, dynamic measurements during driving and their interpretation. Reliability based design using the Load and Resistance Factor design (LRFD) methodology application for driven deep foundations.	Related	Course relates to the eco-economic dynamics of sustainability.
GRAD	CIVE	5410	14	Civil Engineering	Traffic Engineering (Formerly 14.541)	Engineering principles for safe and efficient movement of goods and people on streets and highways, including aspects of (a) transportation planning; (b) geometric design; (c) traffic operations and control; (d) traffic safety, and; (e) management of transportation facilities. Topics include: traffic stream characteristics; traffic engineering studies; capacity and level-of-service analysis; traffic control; simulation of traffic operations; accident studies; parking studies; environmental impacts.	Related	Course integrates the environmental aspect of sustainability via evaluation of environmental impacts of transportation systems.
GRAD	CIVE	5460	14	Civil Engineering	Pavement Design (Formerly 14.546)	Fundamentals of planning, design, construction and management of roadway and airport pavements. Introduction to the theory and the analytical techniques used in pavement engineering. Principal topics covered: pavement performance, analysis of traffic, pavement materials; evaluation of subgrade; flexible and rigid pavement structural analysis; reliabilitydesign; drainage evaluation; design of overlays; and pavement distresses.	Related	Properties of pavement design are examined to promote sustainable practices.
GRAD	CIVE	5470	14	Civil Engineering	Airport Planning and Design (Formerly 14.547)	Planning and design of civil airports. Estimation of air travel demand. Aircraft characteristics related to design; payload, range, runway requirements. Analysis of wind data, runway orientation and obstruction free requirements. Airport configuration, aircraft operations, and capacity of airfield elements. Design of the terminal system, ground access system, and parking facilities.	Related	Course examines airport networks to promote efficient and sustainable planning and design.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	CIVE	5490	14	Civil Engineering	Traffic Flow Theory (Formerly 14.549)	Traffic flow theory seeks to describe through precise mathematical models (a) the interactions between the vehicle and the roadway system and (b) the interactions among vehicles. Such theories forms the basis of all the models and procedures used in design and operational analysis of streets and highways. The course examines the fundamental traffic flow characteristics: time headway, flow, time-space trajectories, speed, distance headway and density. In depth treatment of related analytical techniques including traffic stream modeling at both microscopic and macroscopic levels, supply and demand analysis, shock wave analysis, queuing analysis and simulation modeling of traffic systems.	Related	Course examines the dynamics of traffic flow theories in a sustainable way.
GRAD	CIVE	5690	14	Civil Engineering	Micropollutants in the Environment	This course focuses on the generation, fate and transformation, transport, and the impacts of micropollutants in the environment, with emphasis on soil and water matrices. Topics will include nanomaterials and organic micropollutants such as pharmaceuticals, antimicrobials, illicit drugs, and personal care products. Course delivery will be a combination of lectures, experimental analysis, and discussions of assigned reading materials.	Related	Course integrates the environmental aspects of sustainability related to the fate and transport of micropollutants in the environment.
GRAD	CIVE	5710	14	Civil Engineering	Surface Water Quality Modeling (Formerly 14.571)	Theory and application of surface water quality modeling will be combined interactively throughout the course. Data from a stream will be utilized in order to bring a public domain model into operation	Related	Course integrates the environmental aspects of sustainability related to surface water quality modeling.
GRAD	CIVE	5720	14	Civil Engineering	Marine and Coastal Processes (Formerly 14.572)	This course focuses on the coastal dynamics of currents, tides, waves, wave morphology and their effects on beaches, estuaries, mixing and sediment transport/accretion processes. Generalized global aspects of atmospheric and hydrospheric interactions with ocean currents are also presented.	Related	Course integrates the environmental aspects of sustainability related to water coastal and marine dynamics including global aspects of atmospheric and hydrospheric interactions.
GRAD	CIVE	5750	14	Civil Engineering	Groundwater Modeling (Formerly 14.575)	Groundwater Modeling is designed to present the student with fundamentals, both mathematical and intuitive, of analytic and numeric groundwater modeling. An introductory course in groundwater hydrology is a prerequisite for Groundwater Modeling, and the student should be familiar with IBM computers in running text editors and spreadsheets. The semester will start with basic analytic solutions and image theory to aid in the development of more complex numeric models. Emphasis will then switch to numeric ground water flow models (MODFLOW) and the use of particle tracking models (GWPATH) to simulate the movement of solutes in ground water. The numeric modeling process will focus on forming the problem description, selecting boundary conditions, assigning the model parameters, calibrating the model, and preparing the model report. Course topics include: Analytic Methods, Numeric Methods, Conceptual Model and Grid design, Boundary Conditions, Sources, and Sinks, and Particle Tracking.	Related	Course integrates the environmental aspects of sustainability related to ground water quality modeling.
GRAD	CIVE	5800	14	Civil Engineering	Construction Law (Formerly 14.580)	An introduction to contract, statutory and tort law governing the relationships between the multitude of parties involved in the construction process. The purpose of this course is to give students an understanding of how the law interacts with the construction industry. Course introduces students to the obligations, rights and risks of architects, engineers, general contractors, subcontractors, sureties and insurers throughout the construction process.	Related	Course examines the legal side of construction contributing to the economic dynamic of sustainability.
GRAD	CIVE	5850	14	Civil Engineering	Transportation Safety (Formerly 14.585)	Transportation Safety goes beyond the accepted standards for highway design. Providing a safe and efficient transportation system for all users is the primary objective of federal, state, and local transportation agencies throughout the nation. This class addresses fundamentals of highway design and operation, human factors, accident investigation, vehicle characteristics and highway safety analysis.	Related	Course relates the transportation safety measures to current sustainable practices
GRAD	PUBH	5010	19	Work Environment	Social and Behavioral Determinants of Health (Formerly PUBH 501)	This course provides a foundation for the analysis of social and behavioral influences on public health. Planning, implementation, and evaluation of initiatives designed to improve public health are discussed. The course reviews prominent concepts in the social and behavioral sciences and provides examples of their impact on public health. Psychosocial theories of health promotion and how they inform public health practice are analyzed. Public health competencies in social and behavioral sciences provide a foundation for the course content.	Related	Course relates to the social and behavior dynamics that impact public health.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	PUBH	5030	19	Work Environment	Toxicology and Health (Formerly 19.503)	Examines the effects of the major and chemical physical hazards in the modern work environment. Presents principles of toxicology as well as the toxicology of heavy metals, organic solvents, pesticides, harmful dusts, asphyxiants. Mechanisms of the effects on human physiologic systems are described along with the physiologic effects of ionizing radiation, heat stress, noise and repetitive trauma.	Related	Course addresses on the impact of toxins to public health.
GRAD	PUBH	5100	19	Work Environment	Fundamentals of Occupational Health (Formerly 19.510)	This course provides an overview of key topics in the field of occupational health and safety including physical agents and biological and chemical hazards. The measurement and control of various physical agents are covered, including noise, radiation and extreme environments. The course provides an in-depth understanding of indoor air quality problems that may result in health risks as well as prevention and remediation options. Students will understand the health risks from blood borne pathogens, as well as the regulations and methods of prevention. They will also gain knowledge of hazard communication regulations, material safety data sheets and how to research chemical hazards.	Related	Course relates to an overview of the occupational welfare of individuals by examining their environment, health risks, and hazards.
GRAD	PUBH	6140	19	Work Environment	Evaluation of Work Environment Hazards (Formerly 19.614)	This course provides the work environment professional with a systematic method of evaluating chemical, ergonomics and work organizational hazards in the field. Formal walk around inspections are conducted and formal reports are prepared. Sampling strategies and statistical considerations in the quantification of occupational exposures are covered. The health risks and control of physical hazards (noise and vibration) in the work environment are a major focus of this course.	Related	Course provides methods for evaluating work hazards in the field including chemical and health risks.
GRAD	PUBH	5310	19	Work Environment	Health Informatics (Formerly 32.531)	The course provides healthcare professionals with a conceptual and practical understanding of information and communication systems, and how they are used. It also addresses the systems analysis, development and implementation challenges in optimizing today's complex healthcare systems designs to improve both use and clinical outcomes. Students learn the theory, techniques and systems used for transforming clinical data into information useful for decision-making. The current and future role of the health care informatics professional is discussed.	Related	Course explores practical understandings needed for healthcare professionals.
GRAD	PUBH	5770	19	Work Environment	Biostatics for Health Data (Formerly 19.577)	This is a practical course in biostatistical methods for health research. Emphasis is placed on developing an understanding of the use and interpretation of standard biostatistical methods. Topics include probability and sampling distributions, regression and ANOVA, methods for analyzing rates and proportions, power and sample size calculations. Students will gain experience in using a statistical software package to apply and expand their data analysis skills.	Related	Class focuses an understanding and interpretation of biostatistical methods for health research
GRAD	PUBH	5141	19	Work Environment	Aerosol Science (Formerly 19.514)	Basic properties of airborne particles, with particular regard to properties important to health. Includes basic properties of gas-borne particles, uniform particle motion, particle collection mechanisms, filtration, particle sampling, respiratory deposition, particle statistics, electrical properties, and optical properties. Course includes lectures and laboratory.	Related	Course examines the relationship between airborne particles and public health.
GRAD	PUBH	5150	19	Work Environment	Applied Health Economics (Formerly 32.515)	Students study basic economic concepts and how they are applied to healthcare and gain a broad familiarity with the health economics and related health services research literature, as well as experience using economics to analyze health policy issues.	Related	Course applies economics to the effectiveness of public health care systems.
GRAD	PUBH	5160	19	Work Environment	Laboratory Environmental Health and Safety (Formerly 19.516)	This course is designed to provide an overview of hazard recognition, evaluation and control in laboratory environments. This introduction to the field will cover the potential risks of working with chemicals, radioactive materials, animals and biological materials. It will also introduce the use of engineering, workpractices and administrative measures for hazard control and regulations governing the area of laboratory safety.	Related	Course examines the negative impact of hazardous materials and proper hazard control.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	PUBH	5250	19	Work Environment	Industrial Hygiene and Ergonomics (Formerly 19.525)	A survey course covering introductory topics in ergonomics and industrial hygiene. Ergonomics topics include work measurement, anthropometry, biomechanics, psychosocial stress and work reorganization, special emphasis is placed on the recognition and control of work-related musculoskeletal disorders. Industrial hygiene topics will cover the identification, measurement, and control of chemical and physical hazards in the work environment including principles of air sampling and analysis, ventilation and other control technologies, and the use of personal protective equipment with special attention to respiratory and hearing protection.	Related	Course relates the health aspects of sustainability by examining chemical and other hazards in the work environment.
GRAD	PUBH	5420	19	Work Environment	Human Factors (Formerly 19.542)	The functional processes of human systems in the workplace that affect psychosocial health and productivity. Review of associations between work design principles and effects on human well-being, learning, and performance. Human perceptive, cognitive, metabolic, and social-psychologic limitations. Human-machine interactions affecting ""stress"" and learning at the level of individuals and of groups. Introduction to ""healthy"" job redesign, ""conducive production"", and measurement strategies. Principles applied through practical design problems.	Related	Course incorporates the health aspects of sustainability by assessing human dynamics within the workplace.
GRAD	PUBH	5560	19	Work Environment	Analyzing Peace Violence and War (Formerly 19.556)	This course examines the political, and social factors that cause violence and war, together with the possibilities for peaceful citizen action and constructive solutions to violence and conflicts. Different arenas of conflict are discussed, ranging from workplaces, families and communities, to nations, to the world.	Related	Course examines the social factors leading to peace or war.
GRAD	PUBH	6040	19	Work Environment	Geographic Information Systems (GIS) for Health (Formerly PUBH.604)	Geographic information systems (GIS) are of growing importance for analyzing health and environmental data. GIS is a spatial analysis system for the organization, storage, retrieval, and analysis of public health and many other types of data The course will provide an overview of spatial analysis of data of importance to environmental and public health issues and students will analyze implications of spatial data analysis for public health.	Related	Course explores the use of GIS to analyze health and environmental data.
GRAD	PUBH	6131	19	Work Environment	Design and Evaluation Of Ventilation Systems (Formerly 19.613)	A seminar intended for students pursuing research involving industrial ventilation system design and evaluation. It covers material not included in 19.518, such as recent theoretical models which describe system performance, design of systems for high-temperature operation, trouble-shooting techniques, and advanced instrumentation techniques. Course consists of lectures and laboratory sessions.	Related	Course explores the need for proper ventilation systems to promote public and workers health.
GRAD	PUBH	6250	19	Work Environment	Health Policy (Formerly 32.625)	This course provides students with a basic framework for health policy analysis and examines major aspects of U.S. health policy. Detailed consideration and discussion focus on the relationship of national policy to the planning, implementation and funding of healthcare services. The course covers topics such as the healthcare policy environment in the U.S, government-funded healthcare through Medicaid and Medicare, and the Massachusetts healthcare reform.	Related	Course examines the health policy of the United States and how it effects the public.
GRAD	PUBH	6510	19	Work Environment	Work Environment Policy (Formerly 19.651)	This course provides an overview of occupational safety and health policy in the U.S. It focuses on the legal context, especially on OSHA, but also provides an analytical framework for examining the role of social, economic and political factors in the recognition and control of occupational hazards.	Related	Course examines health policy in the United States.
GRAD	PUBH	6540	19	Work Environment	Work, Technology and Training (Formerly 19.654)	This course examines the broader issues of the impact of technology on the work environment and on workers. Topics include technology and craft work, Taylorism and the development of mass production methods, labor in the ""factory of the future"", skill-based automation, shop floor programming, and other issues in technology policy. The course is offered in collaboration with the Department of Regional Economic and Social Development as 57.503.	Related	Class examines the socio-economic aspect of sustainability, specifically the relationship between workers and technology.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	PUBH	6710	19	Work Environment	Comparative Health Systems (Formerly 32.671)	The course explores and compares national health systems (public health and healthcare). Each will be examined to understand its orientation and capacity to promote health, prevent morbidity and premature mortality, and provide primary healthcare for all. Analysis will address the political, economic, and social contexts within which the systemfunctions, as well as their underlying principles. Systems will include the U.S., European nations, and developing nations from latin America Asia, and Africa. Criteria put forward in health promotion charters and declarations developed through World health organization sponsored meetings will be used to assess each systems' strengths and limitations. Students will be able to competently articulate the principles, criteria for effectiveness, and poliies and practices that can establish successful achievement of strong international public health indicators as a foundation for sustainable social development.	Related	Course explores the benefits of various public health systems.
GRAD	PUBH	6731	19	Work Environment	Aging and Society (Formerly PUBH 680)	This course will focus on the study of aging as a social process affecting individuals, society, and social institutions and the impact of social structure and institutions on older adults. The course will use a life course perspective of aging to examine the social construction of old age influenced by race/ethnicity, gender, sexual orientation, socio-economic disparities, and income and educational opportunities. Changing context of family, work and religion impacting the aging population in contemporary society will be analyzed. Effective public health policies and programs to address the well-being of the aging population will be discussed.	Related	Course examines aging as a social process.
GRAD	PUBH	6734	19	Work Environment	Epidemiology of Aging (Formerly PUBH 682)	This course focuses on concepts, principles, and methods of epidemiological research in the study of population aging. Interpretation of the relevance of epidemiological findings to the public health of older populations will be examined. Theoretical and methodological issues in conducting epidemiological research with an aging population will be analyzed.	Related	Course examines public health of older populations.
GRAD	PUBH	6831	19	Work Environment	Nutrition & Physical Activity in Aging Populations (Formerly PUBH 683)	The course reviews the importance of two key life-style behaviors, nutrition and physical activity, in older adults. Methods of nutritional and physical activity assessment, inter-relationships between nutrition, physical activity, and health, and public health policy impacting nutrition, activity and health will be discussed. Physiological, psychological and socio-economic issues affecting nutrition and physical activity among older adults will be analyzed. The impact of nutrition and physical activity in health, longevity, and quality of life in aging populations will be analyzed.	Related	Course incorporates sustainability by examining public health policy and socio-economic issues impacting nutrition.
GRAD	PUBH	6870	19	Work Environment	Quantitative Models Environmental Health (Formerly 19.687)	In this seminar readings, discussion, group work and computer exercises are used to gain an understanding of how certain kinds of quantitative models work. Emphasis is placed on the underlying assumptions of these models, and on gaining an intuitive understanding of the most common modeling procedures. The types of models covered will be those most important to current research and policy in environmental health, including ordinary least squares, the method of maximum likelihood, Monte Carlo simulation, and systems of ordinary difference equations. There will be a diverse set of readings, frequent computer exercises to be worked either individually or in groups, and a final project. Facility with Excel or an analogous spreadsheet program will be assumed. .	Related	Course incorporates models related to current research and policy in environmental health.
GRAD	MECH	5420	22	Mechanical Engineering	Convective Heat/Mass Transfer (Formerly 22.542)	Conservation equations. Heat transfer in laminar and turbulent boundary layer and duct flow. Free convection. Convective mass transfer.	Related	Course applies the science of heat transfer to aspects of clean energy.
GRAD	MECH	5970	22	Mechanical Engineering	Processing of Composite Materials (Formerly 22.597)	Methods of fabrication. Analysis of forming, fiber orientation, permeability, polymer rheology, flow through porous media, consolidation, cure kinetics, combined flow and cure models. Effect of manufacturing defects	Related	Course relates to the practice and analysis of fabrication and its impact on the manufacturing industry.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	MECH	5100	22	Mechanical Engineering	Dynamics and Diagnostics of Rotating Machinery (Formerly 22.510)	Course provides the theoretical and practical background in the fundamentals of dynamics and diagnostics of rotating machinery. The course starts with an overview of rotating machinery components and systems with emphasis on their designs, and then builds and in-depth understanding of the dynamics of rotating systems by analyzing the design and dynamics of their component. Diagnostics, health monitoring, and associated signal processing theories regarding rotating machinery are emphasized, with applied examples such as aircraft engines, gas turbines, rotorcrafts, wind turbines, and automotive drivetrains, along with other turbomachines.	Related	Course relates the application of rotating machinery components including application in wind turbines and gas turbines.
GRAD	MECH	5260	22	Mechanical Engineering	Transport Processes in Energy Systems (Formerly 22.526)	Course focuses on the development of a fundamental understanding of transport processes from a multi-scale and multi-physics perspective, and the application of such understanding to the analysis of energy engineering systems. Derivations of the equations describing the mechanisms for mass, momentum, and energy transport are presented, together with approaches for the evaluation of material properties and constitutive relations. Emphasis is placed on a holistic view of transport processes as combinations of transient, advective, diffusive, and reactive phenomena.	Related	Course focuses on development of analysis of energy engineering systems.
GRAD	MECH	5450	22	Mechanical Engineering	Advanced Industrial Heat and Mass Transfer (Formerly 22.545)	This course specializes in obtaining practical solutions for applied and industrial heat transfer problems related to device development and production processes. Topics include review of heat transfer modes (i.e. conduction, convection and radiation), transport phenomena in material processing and manufacturing, analytical models and numerical simulations Representative problems include curing of polymers, thermal conditioning of human body, food packaging and long-term food preservation, thermal management of electrical and electronic equipment, control of water vapor and pollutant transfer, material processing, and heat and mass exchangers.	Related	Course provides an understanding of the processes and problems with industrial heat transfer.
GRAD	MECH	5490	22	Mechanical Engineering	Cooling of Electronic Equipment (Formerly 22.549)	This course focuses on teaching the primary techniques for cooling electronics, and methods for modeling their performance. Heat-transfer fundamentals: conduction, convection, radiation, phase change, and heat transfer across solid interfaces. Heat-generating electronic equipment: ICs, power converters, circuit cards and electrical connectors. Thermal management equipment: heat sinks, interface materials, heat spreaders including liquid loops, and air movers. System design: system packaging architectures, facilities, system analysis. Advanced Topics: spray cooling, refrigeration	Related	Course relates the fundamentals of electronic cooling systems to sustainable practices.
GRAD	ENGY	5340	24	Chemical Engineering	Fundamentals of Nuclear Security and Safeguards (Formerly 24.534)	This course will include technical and policy matters related to nuclear security and safeguards. The students will explore in interplay between technical and social science disciplines. Students will be introduced to fundamental nuclear physics and engineering, material science, risk assessment, computational techniques, modeling and simulation, information technology, measurement techniques, and detector development Those technical disciplines will be combined with social science fields such as political science, international relations, international law, energy policies, and regional studies.	Related	Course integrates social and environmental health aspects of nuclear security and safeguards.

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GRAD	ENGY	5100	24	Chemical Engineering	Nuclear Fuel Cycle (Formerly 24.510)	This course will explore the various stages of the nuclear fuel cycle. The nuclear fuel cycle is broadly classified into three stages; front end, service stage, and back end. The course will introduce students to the various sub stages within the three broad stages of the nuclear fuel cycle. The course will explore the technology that is currently being used in these stages, then compare difference in approaches. Further modifications to the fuel cycle management will be discussed to make nuclear energy more sustainable. The course will provide an overview of front end fuel cycle including: mining, milling, enriching, fabrication; back end of the fuel cycle including: waste and recycling (or not); and in core fuel management, burnup calculations; and approaches to balance the cost of electricity production using nuclear reactors. The students will be introduced to nuclear burnup code such as ORIGEN. At the conclusion of the course students will be tasked to design and evaluate an aspect of the nuclear cycle that has been discussed in the class including but not limited to: enrichment plant, in-core fuel management, spent fuel management.	Related	Course provides overview of the nuclear fuel cycling including nuclear waste and recycling.
GRAD	ENGY	5140	24	Chemical Engineering	Chemical and Nuclear Waste (Formerly 24.514)	History of nuclear waste disposal; engineering design of disposal systems. Present status of waste and the character and quantities of future wastes. Review of disposal concepts on a generic basis. The national plan for waste disposal.	Related	Course integrates sustainable aspects of nuclear waste generation and disposal.
GRAD	ENGN	5500	25	Intercollegiate Engineering	Introduction to Nanotechnology (Formerly 25.550)	This course is designed to provide you with a broad overview to the multi-disciplinary field of nanotechnology. The course is team-taught by researchers from science, engineering, health and environment, management, and humanities disciplines. The topics include an introduction to nanoscale phenomena; fundamental theoretical concepts and experimental techniques in nanotechnology; nanoscale manufacturing and processing; innovative nanomaterials for various applications; applications of the technology; and environmental and health impacts of nanotechnology.	Related	Course incorporates health and environmental aspects of nanotechnology.
GRAD	ENGN	5700	25	Intercollegiate Engineering	Selected Issues in Nanomanfacturing (Formerly 25.570)	A seminar course that examines the issues associated with high rate template-based nanomanufacturing, including: technologies for nanoscale templates, high rate assembly of nanoelements and polymer systems, registration at the nanoscale, interfacing with biological systems, measurement of nanoelements, and molecular modeling. Environmental, regulatory, and ethical issues associated with new technologies are also addressed. The course is co-taught by faculty from Northeastern University, the University of Massachusetts Lowell, and the University of New Hampshire. Meeting dates: January 27, February 10, February 24, March 10, March 24, and April 7. Time: 12:00 to 3:30, including lunch.	Related	Course integrates environmental and ethical issues associated with new nanotechnology issues.
GRAD	PLAS	6750	26	Plastics Engineering	Biomaterials II (Formerly 26.675)	The degradation of biomaterials in the biological environment for applications such as sutures, orthopedic implants, dental implants, etc. will be reviewed. Students will analyze issues unique to the field of implants, devices and biomaterials. While reviewing new products and standards, the prospective and possibilities of biomaterials will be studied.	Related	Course relates to the environmental aspect of sustainability by examining the degradation of biomaterials.
GRAD	PLAS	5400	26	Plastics Engineering	Commercial Development of Plastics (Formerly 26.540)	The concepts of industrial marketing will be reviewed for research, pricing strategies, and product planning for market segmentation, place (distribution)-promotional activities. Topics will include creating a demand, selling, and servicing base resins and additives.	Related	Course reviews the marketing and development of plastics in a sustainable way.
GRAD	PLAS	5180	26	Plastics Engineering	Plastics Product Design (Formerly 26.518)	This course reviews the theoretical principles and the engineering practice associated with the development of new plastic products. The course focuses on design practices for products that will be produced by conventional and advanced injection molding processes. Topics include design methodology, plastic materials selection, design for manufacturing, computer aided engineering, mechanical behavior of plastics, structural design of plastic parts, prototyping techniques, experimental stress analysis, and assembly techniques for plastic parts.	Related	Class relates to the design and application of plastics in a sustainable way.

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GRAD	PLAS	5150	26	Plastics Engineering	Lean Plastics Manufacturing (Formerly 26.515)	Methods of analysis and operation of plastics manufacturing facilities. Topics include: performance measurement, inventory control, forecasting, production planning, scheduling, resource management, supply chains, various technologies for improved productivity.	Related	Course focuses on efficient plastic engineering and manufacturing incorporating resource management.
GRAD	PLAS	5750	26	Plastics Engineering	Biomaterials I (Formerly 26.575)	A comprehensive study of the history, current and future rents within biomedical devices and their applications. Students will be introduced to research techniques used to analyze the different classes of biomaterials. An overview of typical host reactions such as inflammatory response and their evaluation will be touched upon.	Related	This course provides students with an understanding of current and future economics of biomaterials along with their application in a sustainable way.
GRAD	PLAS	5130	26	Plastics Engineering	New Plastics Materials (Formerly 26.513)	Critical examination of the new plastics appearing in the research literature and being field-tested for commercialization in the plastics industry.	Related	Course examines the plastic industry and ways to make it more sustainable.
GRAD	PLAS	5370	26	Plastics Engineering	Business Law for Engineers (Formerly 26.537)	Business legal issues engineers encounter in practice, including contractual, products liability, and intellectual property issues. Business torts relating to product design, manufacturing and inadequate warning defects. Unreasonably dangerous products and strict liability.	Related	Course relates legal issues associated with engineering practices.
GRAD	PLAS	6070	26	Plastics Engineering	Supply Chain Management for Engineers (Formerly 26.607)	This course focuses on design, development, and planning supply chain networks while examining the product's life cycle with an emphasis of the manufacturing processes. Throughout the course, global supply chain management, supply chain drivers, distribution networks, network design under uncertainty, supply-demand cycle, demand forecasting, inventory management, supply chain performance, end -of-life, cradle-grave and cradle-cradle products, along with supply chain decision-making topics will be covered. These topics will be demonstrated with the implementation of examples, and case studies.	Related	Course incorporates the economic dynamic of sustainability.
GRAD	HSCI	5500	30	Intercollegiate Health	Human Development and Pathophysiology (Formerly 30.550)	The physiological steady state of the human body and disruptions that result over the life span will be examined as well as the pathophysiological mechanism manifested in disease states. The course addresses defense, compensating, and adaptive responses to the pathophysiological processes as they apply to the various systems rather than being a survey course of diseases.	Related	Class integrates the socio-environmental aspect of sustainability through a physiological lense.
GRAD	HSCI	6140	30	Intercollegiate Health	Health Care Management (Formerly 30.614)		Related	Course integrates health aspect of sustainability.
GRAD	NURS	6610	33	School of Nursing	Family Health Nursing II (Formerly 33.661)	The focus of this course is on health promotion and management of common health issues pertaining to woman and to infants, children, and adolescents. Based on current scientific research, students develop skills in analyzing data, differential diagnosis, and developing holistic plans of care that address the health promotion, illness prevention, and primary care needs of a wide-variety of client populations.	Related	Course integrates health and social aspects of sustainability via focus on health promotion and management of health issues pertaining to women, infants, children and adolescents.
GRAD	NURS	6620	33	School of Nursing	Family Health Nursing III (Formerly 33.662)	This capstone course builds on the family nursing curriculum of the previous three semesters. Issues related to health care policy and legislation relative to their impact on the role of the nurse practitioner within primary care are analyzed.	Related	Course integrates health and social aspects of sustainability via focus on health promotion and management of health issues pertaining to health care policy and legislation.
GRAD	NURS	6600	33	School of Nursing	Family Health Nursing I (Formerly 33.660)	Focus is on the advanced practice-nursing role in the holistic assessment and management of health problems of the family across the lifespan within a family and community context. Evidence-based strategies to prevent and treat common health problems and to maintain and promote health through the application of advanced knowledge; theory, relevant research and critical decision-making are emphasized. Community resources, pharmacological therapies, and complementary strategies are addressed.	Related	Course integrates health and social aspects of sustainability via focus on practice nursing role in holistic assessment and management of health problems of families and communities.
GRAD	NURS	7020	33	School of Nursing	Theoretical Foundations of Health Promotion (Formerly 33.702)	Study of the multidisciplinary theories, which direct or have the potential to direct	Related	Course integrates health and social aspects of sustainability via focus on health promotion research.
GRAD	NURS	7070	33	School of Nursing	Epidemiology of Health Promotion (Formerly 33.707)	This course provides an in-depth exploration of the concepts and methods of epidemiological research. Students will critique the principles of epidemiology with an emphasis on health promotion research. Students will analyze and develop epidemiological approaches, which seek to promote health and prevent disease.	Related	Course integrates health and social aspects of sustainability via focus on health promotion research.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	DPTH	6420	34	Physical Therapy	Health Policy & Admin (Formerly 34.642)	This course explores the social, political, and economic policies that impact the delivery of physical therapy services and health. The course underscores the issues of professionalism, leadership, management, and the advocacy to foster excellence in autonomous practice for the benefit of members and society. The course emphasizes leadership in promoting cultural competence, global health initiatives, social responsibility, effective application of technology, and health services research.	Related	Class relates to economic and social policies that impact the health care industry and public health
GRAD	LGST	5140	41	Legal Studies	Engineering Law (Formerly 41.514)		Related	Course integrates ethical and legal aspects of sustainability.
GRAD	ENGL	5060	42	English	Writing in the Community (Formerly 42.506)	Students learn advanced writing techniques in the classroom and apply them to real writing tasks in the community. Assignments include a writing project designed to meet the needs of a local organization, along with research and reflective pieces.	Related	Course examines the application of writing techniques to the needs of communities.
GRAD	ENGL	5400	42	English	Modernist Literature (Formerly 42.540)	Much f the influential literature produced during the modernist period, roughly 1900-1950, was considered radical in its time. This course will focus on the experimental, avant-garde impulse that manifests itself in the themes and techniques of key modernist texts, relating that impulse to questions about the nature of identity, the role of gender and class in constituting the modernist subject, and the sociocultural functions of literature itself. Readings will primary texts such as Virginia Woolf's Mrs. Dalloway, Zora Neale Hurston's Their Eyes were Watching God, T.S. Eliot's poetry, and James Joyce's Portrait of the Artist as a Young Man, as well as theoretical texts. We will explore this period by examining these exemplary texts, historical and social events, and films.	Related	Course examines how literature can influence populations, leading to social change.
GRAD	HIST	5360	43	History	Readings on the Great Depression and the New Deal (Formerly 43.536)	This course examines a turbulent period in American history: the era of the great economic boom and cultural revolution of the 1920s, the Great Depression and the New Deal, and World War II. This course critically examines the growth of a consumer economy in the 1920s, the cause of the Depression, and how the New Deal response affected the lives of ordinary Americans. We take a close look at the Great Migration of African Americans out of the South and how it affected race relations and the impact of the Great Depression and the New Deal on women. Finally, we consider how the country shook off its isolationism and emerged at the end of the Second World War as the world's hegemonic superpower. Throughout, we consider the period's larger lessons for other disjunctures in history.	Related	Course will focus on the economic and social dynamics of the United States during the early 1900s. Students will gain an understanding of factors that lead to the Great Depression and the following economic and governmental policies.
GRAD	HIST	5100	43	History	Modern Revolutions in a Global Context (Formerly 43.510)	Course is an introduction to the historical study of revolutions and revolutionary movements. We will define revolution and examine competing theories about its causes, outcomes, and processes through the study of several revolutions, upheavals, coups, and rebellions from around the world. We will read about and discuss the origins of the modern idea of revolution and a few leading theorists and theories along with our historical analyses. Over the course of the semester, we will identify the elements of a revolution and the specific historical, social, and political contexts that create them.	Related	Course examines the causes and outcomes of revolution incorporating social and political aspects of sustainability.
GRAD	HIST	5130	43	History	World History: Theory and Practice (Formerly 43.513)	In an increasingly globalized and diverse age, world history has become a growing teaching field at the secondary and the college level in the United States. The overarching purpose of this class is to prepare students as teachers and practitioners of world history;. This course will introduce the field and concepts of world history. It will familiarize students with available materials such as textbooks, readers, primary documents, academic books and articles, websites, and podcasts. This course also exposes students tot he global processes that have shaped our world since roughly the year 1400. Taking a global comparative perspective, this course will help students to develop a topical, chronological, and geographical understanding of global history and cultures.	Related	Course integrates political and social aspects of sustainability and global processes that have shaped our world.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	HIST	5400	43	History	Law, Politics and Society in Early America (Formerly 43.540)	This class closely examines the colonies of Virginia, Maryland, Massachusetts, Maine, New Netherland/New York, Rhode Island and the Carolinas from the early seventeenth century through the mid-eighteenth century. The class focuses particularly on the wide range of legal, political and social systems present in British North America which made it possible for certain colonies to survive and thrive, while other colonies foundered and failed. Students will master a wide range of primary and secondary sources during the semester and will finish by conducting their own research on one of these seven colonies.	Related	Class integrates social, political and economic aspects of sustainability in early America.
GRAD	HIST	5450	43	History	Native Peoples of the Northern Eastern Woodlands (Formerly 43.545)	Students will analyze and research the history of the Native peoples of the northern Eastern Woodlands - an area encompassing the northeastern U. S., southeastern Canada, and the North American Great Lakes region. The course provides coverage from pre-contact to the present. It emphasizes contributions of the first peoples to the broader course of the history of the northern Eastern Woodland region. The course offers a framework for understanding indigenous Americans and their historical experiences by exploring the forces of continuity and change that have shaped Native Americans' lives through time and space. This view will stress the ongoing presence of American Indian peoples and their efforts to preserve the integrity and viability of their dynamic and self-directed societies.	Related	Course integrates social, cultural and political aspects of sustainability researching Native Americans' experiences and lives.
GRAD	HIST	5470	43	History	History of the U.S. South (Formerly 43.547)	This graduate course examines selected topics in the history of the United States South from the seventeenth century through the present. Topics include the development of plantation slavery, the Civil War and Reconstruction, industrialization and the ""New South,"" segregation and disenfranchisement, the Civil Rights Movement, and conservatism. A theme that runs through the course is the question of how ""new"" the ""New South"" was--that is, to what extent Southerners left behind antebellum patterns of labor relations and social hierarchies as they remade their region after the Civil War.	Related	Course integrates social, cultural and political aspects the sustainability and the history of the US South.
GRAD	HIST	5500	43	History	Graduate Reading Seminar: Imperial Japan, 1894-1952 (Formerly 43.550)	This course is a reading and writing intensive study of the political, social, cultural, and economic history of Imperial Japan, from the First Sino-Japanese War (1894-1895) through the end of the American occupation after the Pacific War (1952).	Related	Course integrates political, social, cultural and economic aspects of sustainability in Japan.
GRAD	HIST	5510	43	History	Reading Seminar on Modern China (Formerly 43.551)	The course explores the intersection of tradition and revolution in modern Chinese history. It is a seminar where students do assigned readings and come to class prepared to discuss the readings. The objective of the course is to gain a critical understanding of China's modernization process - the traditional and radical forces that shaped the process, the impact of the process on everyday life, and the blending of what is traditionally Chinese and what is modern or borrowed from the outside.	Related	Course integrates social and economic aspects of sustainability as they related to China's modernization process.
GRAD	HIST	5520	43	History	Enterprise in Latin America (Formerly 43.552)	This M.A.-level course introduces students to the history of enterprise in Latin America through four case studies and a research project. No prior knowledge of Latin American history is required or expected. Each of the case studies, including the students' own research projects on an enterprise in Latin America, will consider the wide range of factors that impact a business. These include infrastructure, government regulations and policy, labor, markets, and environmental concerns, among others. The case studies and readings may change from semester to semester, but will be representative of different time periods and regions within Latin America.. Throughout the semester, the class will also consider the historical legacies of each enterprise and how it continues to affect the region's economic and political development today.	Related	Course integrates political, environmental and social aspects of sustainability as they relate to the history of enterprise in Latin America.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	HIST	5590	43	History	Reconstructing America: Upheaval, Immigration, and Reform (Formerly 43.559)	The second year of the Teaching American History Project, involving UMass Lowell and eight school districts in the Greater Boston Area, will include a week-long Summer Institute, title ""reconstructing America: Upheaval, Immigration, and Reform"". The institute's seminars, readings, and field trip will focus on several topics tied to immigration, internal migration, social and economic struggle, and reform. This encompasses a history of the major immigrant groups in late 19th and early 20th century America; settlement, acculturation and resistance; Jim Crow and the Great Migration in the early 20th century; and post World War II immigration and refugee settlement. The Summer Institute will offer a blend of U.S. history and local history, namely Lowell and Lawrence, Massachusetts, with readings tied to recent scholarship in African-American, Latino, and Euro-American immigrant history.	Related	Course focuses on the social and economic aspects of sustainability in reconstructing America.
GRAD	CRIM	5130	44	School of Criminology & Justice Studies	Crisis and Emergency Management (Formerly 44.513/CRIM 570)	This course will provide a broad introduction to the critical challenges of disaster management. The course will address past and present strategies for reducing and responding to hazards posed by both manmade and natural disasters. Emphasis will be placed on what we can learn from the history of disasters, and on how we can apply those lessons to the management of future events.	Related	Course relates the process of disaster management to the economic and environmental outcomes of a major disaster.
GRAD	CRIM	5670	44	School of Criminology & Justice Studies	Overview of Homeland Security (Formerly 44.567/CRIM 574)	The U.S. has embraced the homeland security monolith without a full understanding of what it encompasses. This course provides a comprehensive overview of homeland security and defense as undertaken in the United States since 9/11. The course critically examines the current body of knowledge with a specific focus on understanding security threats, sources, and reasons for these threats. The roles of the key players at the federal, state and local levels, the policies and procedures enacted since 9/11, and the homeland security system in practice are also examined.	Related	Course examines homeland security with a specific focus on understanding threats and policies and procedures enacted since 9/11.
GRAD	CRIM	5490	44	School of Criminology & Justice Studies	Comparative Terrorism and Counterterrorism (Formerly 44.549/CRIM 572)	This course examines a broad spectrum of terrorist groups and counterterrorism responses in over a dozen countries, including Colombia, Germany, India, Israel, Italy, Northern Ireland/UK, Pakistan, Somalia, Spain, Sri Lanka, Turkey and Yemen. This comparative analysis will help students develop and understanding of patterns and trends within political violence (including radicalization, tactics, financing, targeting behavior, malevolent creativity, disengagement and de-radicalization) and the many different policies and strategies adopted by governments in response to terrorist threat.	Related	Course integrates the social and political aspects of sustainability by examining international terrorism and political violence.
GRAD	CRIM	5680	44	School of Criminology & Justice Studies	Contemporary Security Studies (Formerly 44.568/CRIM 575)	This course examines the complex nature of key domestic and international security threats and responses. Topics include terrorism and insurgency, transnational organized crime, WMD proliferation, cyber-security, intelligence, national and homeland security strategies, critical infrastructure protection, and theories of international security.	Related	Course relates the social aspects of domestic and international security threats.
GRAD	CRIM	5680	44	School of Criminology & Justice Studies	Contemporary Security Studies (Formerly 44.568/CRIM 575)	This course examines the complex nature of key domestic and international security threats and responses. Topics include terrorism and insurgency, transnational organized crime, WMD proliferation, cyber-security, intelligence, national and homeland security strategies, critical infrastructure protection, and theories of international security.	Related	Course relates the social aspects of domestic and international security threats.
GRAD	CRIM	6690	44	School of Criminology & Justice Studies	Counterterrorism Policies and Strategies (Formerly 44.576/CRIM 669)	This course examines the formulation and implementation of U.S. national strategies for combating terrorism, protecting critical infrastructure, and preventing the proliferation of chemical, biological, radiological and nuclear weapons or materials that could be used by terrorists. Students will develop an understanding of the structure and operations of key federal agencies, state and local fusion centers, and examine the political, legal, moral and ethical issues of countering modern terrorism threats.	Related	Course examines the negative impact terrorism can have on a sustainable society.

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GRAD	CRIM	5730	44	School of Criminology & Justice Studies	Law and Public Policy (Formerly 44.573/CRIM 613)	The course is an introduction to crime and the efforts to control crime through public policy. We explore the foundations of the policy-making process at the federal, state, and local levels. The course also considers broad theoretical applications pertaining to public opinion, national culture, and comparative analyses among Western democracies and their differing approaches to crime. This course employs a variety of learning tools, from roundtable discussions to policy cases.	Related	Course explores the relationship between the roots of public law and the social dynamics of sustainability.
GRAD	CRIM	6030	44	School of Criminology & Justice Studies	Correlates of Crime and Justice (Formerly CRIM 603)	This course examines the nature of the relationships among attributes and indices at the individual, situational, and aggregate levels to various forms of crime and systems of justice. The implications of criminal laws, criminal justice practices, and programs are examined with a focus on inequalities based on gender and race.	Related	The course integrates the social aspects of sustainability by examining gender and race inequalities.
GRAD	CRIM	6110	44	School of Criminology & Justice Studies	Law and Social Control (Formerly CRIM 611)	This course examines and analyzes the various means by which society attempts to control criminal conduct. Social control encompasses both formal and informal mechanisms and a variety of institutions and social processes to deter inappropriate conduct, if possible, and/or punish and reform such conduct. Social control has evolved considerably over time and various social control philosophies and techniques have been prevalent at one time but not in others. Because social control is a response to inappropriate conduct, the course will also provide a brief introduction to the concepts of deviance and crime and the differential social control needs and priorities posed by different kinds of inappropriate conduct.	Related	The course integrates the social aspects of sustainability by examining society attempts to control criminal behavior.
GRAD	CRIM	5600	44	School of Criminology & Justice Studies	Gender, Race & Crime (Formerly 44.560)	The implications of criminal laws, criminal justice practices and programs. Focus on inequalities based on gender, race and class.	Related	Course examines the inequalities between gender, race, and social classes in relation to the criminal justice system.
GRAD	CRIM	5230	44	School of Criminology & Justice Studies	Courts and Sentencing (Formerly CRIM 523)	Examines the various philosophies and theories of punishment and the distinct court structures and approaches to sentencing. Students will explore recent changes in sentencing policies and will study the social and economic costs of incarceration. We will examine sentencing disparities and their appropriateness based on offender and victim characteristics such as race and gender. Explores the debates regarding contemporary sentencing practices and investigates the increasing use of specialized courts and their effectiveness.	Related	Course examines the social and economic costs of incarceration and philosophies/theories of punishment.
GRAD	CRIM	5260	44	School of Criminology & Justice Studies	Economic Crime (Formerly 44.574/CRIM 526)	Introduction to economic crime including nature, causes, consequence, investigation, and prevention. Empirical findings and major economic crime cases will also be examined.	Related	Course integrates the economic aspects of sustainability by examining economic crime.
GRAD	CRIM	5540	44	School of Criminology & Justice Studies	Threat Assessment and Risk Management (Formerly 44.554/CRIM 573)	The goal of this course is to enhance understanding and increase expertise regarding risk management and the impact of terrorism on economic and other critical infrastructures in the United States. The course will provide the tools (operational and statistical) and technology required to mitigate these risks. A second purpose of the course is to examine and critically discuss current and future methods to create best practices in security management.	Related	Course provides students an understanding of the impact a terrorist attack can have on the economy and critical infrastructure necessary to maintain a sustainable society.
GRAD	CRIM	5660	44	School of Criminology & Justice Studies	Transportation Systems Safety and Security (Formerly 44.566)	This course will look at safety, security and emergency management with regard to transportation operations; multi-modal transportation security threats, vulnerabilities, risk and strategies to mitigate and incident; and the security of supply chains and critical infrastructure. The course will use case studies to provide the student with the knowledge, skills, and abilities to effectively safeguard the movement of assets within interconnected transportation networks.	Related	Course explores the dynamics of transportation security management in relation to the economy and environment.
GRAD	CRIM	5710	44	School of Criminology & Justice Studies	Domestic Terrorism and Violent Extremism (Formerly 44.526/CRIM 571)	This course examines the evolution and contemporary nature of domestic terrorist threats and violent extremist movements that the U.S. has confronted over the past several decades. Special attention is focused on right-wing militias, religious extremists, racial supremacist/hate groups, and extreme environmental and animal rights groups. Students will also learn about political and socioeconomic factors that enable a terrorist group's ideological resonance, prison radicalization, the role of the Internet in mobilizing individuals toward violent behavior, and the legal and criminal justice dimensions of responses to terrorism.	Related	Course discusses the implications of domestic terrorism from a broad spectrum of social groups and their impact on the economy and critical infrastructure.

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GRAD	CRIM	5770	44	School of Criminology & Justice Studies	Terrorism Networks (Formerly 44.577/CRIM 666)	This course will explore the dynamics of terrorist networks and will equip students with an understanding of the drivers of terrorist network formation, development and disintegration. The course will also provide students with knowledge and understanding of how, why and when networks expand, affiliate, and occasionally splinter. And finally, students will be guided through the applicability of network theory and analysis to the design of hypothetical operational responses and contingency planning surrounding the disruption or containment of terrorist networks.	Related	Course integrates social aspects of sustainability by examining the dynamics and drivers of terrorist networks.
GRAD	CRIM	6440	44	School of Criminology & Justice Studies	Global Trafficking and Criminal Networks (Formerly 44.644/CRIM 665)	Illicit economic activities are a global phenomenon with local impact. This course will examine the threat that global trafficking poses to a nation¿s security, political stability, economic development, and social fabric. The lessons in this advanced graduate-level seminar are organized around the trafficking activities of greatest concern to the United Nations, Interpol, IAEA and other international agencies ¿ as well as to the U.S. Departments of State, Defense, Justice, and Homeland Security.	Related	Course examines crimes against humanity and the social and economic impact it has on countries.
GRAD	CRIM	6440	44	School of Criminology & Justice Studies	Global Trafficking and Criminal Networks (Formerly 44.644/CRIM 665)	Illicit economic activities are a global phenomenon with local impact. This course will examine the threat that global trafficking poses to a nation¿s security, political stability, economic development, and social fabric. The lessons in this advanced graduate-level seminar are organized around the trafficking activities of greatest concern to the United Nations, Interpol, IAEA and other international agencies ¿ as well as to the U.S. Departments of State, Defense, Justice, and Homeland Security.	Related	Course examines crimes against humanity and the social and economic impact it has on countries.
GRAD	CRIM	6509	44	School of Criminology & Justice Studies	Violence in America (Formerly CRIM 650)	This course provides an in-depth analysis of the causes, context, and control of a wide range of violent crimes. Topics covered in this class include: Murder, rape, robbery, assault, and violence in the helping professions, the workplace, school, gang violence, cult violence, and institutional violence. For each form of violence, we examine issues related to(1) the extent of the problem, characteristics of the crime, victim, and offender, (2) causation, (3) crime prevention, and (4)crime control strategies.	Related	Course examines crimes against humanity and their social and economic impact.
GRAD	CRIM	6630	44	School of Criminology & Justice Studies	Prisons A Global Perspective (Formerly CRIM 663)	This course provides a comprehensive, global assessment of the use/misuse of prisons and jails in North America (U.S. focus), and in other parts of the world, including selected countries in Europe, Asia, Africa, and South America. A broad range of topics are compared among U.S. and global policies and practices. Topics include: (1) who goes to prison and why; (2) sentencing disparity and sentencing reform movements; (3) prison life and prison organization; (4) prison classification; (5) inmate, staff, and management culture; (6) prison violence and disorder; (7) treatment programs; (8) the links between prison culture and community culture; (9) the prospects for offender change; and (10) offender reentry.	Related	Course examines the human rights aspect of sustainability in a global context.
GRAD	CRIM	6700	44	School of Criminology & Justice Studies	Seminar in Terrorism Studies (Formerly CRIM 670)	This course will offer an in-dept examination of one more special topics within the field of terrorism. Examples include terrorist psychology, the use of women and children by terrorist groups, models of successful hostage negotiation or the use of social network analysis to understand the evolving nature of a terrorist threat. Students should consult with their advisor and the program director before registering for this course.	Related	Course examines the negative impact terrorism can have on a sustainable society.
GRAD	PSYC	5040	47	Psychology	The Family System (Formerly 47.504)	Studies family processes and the interplay between the family and other social, cultural, and socio-economic systems. Topics include parental roles, changing family structures, racial and ethnic factors, and interactions between family, work, and community.	Related	Course integrates the socio-economic aspects of sustainability by examining family processes.
GRAD	PSYC	5020	47	Psychology	Seminar in Community Social Psychology (Formerly 47.502)	Offered from time to time to highlight specialized areas of faculty interest and to acquaint the student with new developments from a broad range of current psychological theory and research and how these developments might affect social and community life.	Related	Course examines the social dynamics of sustainability in community.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
GRAD	PSYC	5220	47	Psychology	Psychology of Diversity (Formerly 47.522)	This course introduces students to theoretical, philosophical and experiential frameworks for thinking about diversity in our communities and society. It includes an examination of the experiences of diverse groups, especially traditionally oppressed groups and individuals. This course is designed to engage students in a process of introspection and self-examination about issues such as racism, sexism, classism, and homophobia. Emphasis will be placed on challenging one's own world view and the way it fits into institutional oppression, as well as the way it may affect our work as community change agents.	Related	Course examines the diversity of thinking in communities and society.
GRAD	PSYC	5010	47	Psychology	Applied Developmental Psychology (Formerly 47.501)	Provides a life span developmental perspective on individual and social adaptation and change. Examines appropriate theory and research, and illustrates the influences of environmental, social and cultural factors.	Related	Course examining the influences of environmental, social and cultural factors on life span development.
GRAD	PSYC	5230	47	Psychology	Women in the Community (Formerly 47.523)	An examination of women's roles in the home, community, and work place; examines psychological consequences, social structural influences, and options for change. Topics include: housework and childcare; violence against women; work place stratification issues; and women's contributions to their communities.	Related	Course focuses on equal rights of women in the workplace.
GRAD	PSYC	5260	47	Psychology	Workplace Diversity (Formerly 47.526)	This course will explore the challenges presented by the increasingly diverse workforce within the United States. Students will consider how work groups and organizations can effectively incorporate a diversity of perspectives. Students will consider issues of oppression, discrimination and bias, with particular attention paid to the situation here in the Merrimack Valley. There will also be some focus on personal awareness and the development of skills for addressing diversity concerns.	Related	Course examines the necessity for diversity in the workplace.
GRAD	PSYC	5270	47	Psychology	Immigrant Psychology and Communities (Formerly 47.527)	This course will focus on the immigrant experience and the various immigrant groups in the United States with emphasis on recent immigrants in Lowell and Massachusetts. Theories of acculturation and adaptation to a new cultural environment will be extensively examined in the course. An experiential approach will be integrated throughout the course via the incorporation of guest speakers, films, autobiographies/novels, and food. Students will have ample opportunities to read, reflect, discuss and write about the immigrant experience. As our country is a country of immigrants, this course should have relevance to anyone working in the community.	Related	Course focuses on the dynamics of immigrants in communities and the accompanied social implications.
GRAD	PSYC	5450	47	Psychology	Community and Organizational Change (Formerly 47.545)	A review of skills, techniques, and qualities associated with effective community and organizational interventions. Topics include the possibility and desirability of change, methods for studying change, assessment of needs and resources, visioning and planning, membership recruitment and retention, strategy and tactics, leadership styles, publicizing, funding, advocacy, evaluation techniques, and the personal qualities of the change agent. Both cultural factors and the community context of interventions will be discussed. Application to specific cases will be made. Students will have the opportunity to apply course material to settings outside the classroom.	Related	Course focuses on the interactions between groups that bring about change in a community.
GRAD	PSYC	6800	47	Psychology	Aging and Community (Formerly 47.680)	This course addresses aging processes in diverse community contexts, with an emphasis on practical applications of theory and research to empower elders, promote culturally-appropriate services, and foster intergenerational community. Topics will include theoretical approaches to adult development and aging, with a focus on ecological models and theories, individual differences and strengths that influence aging processes, social support and sense of community among older adults, civic engagement and activism, ¿aging in place¿ and ¿age-friendly¿ communities, globalization and aging, dependency and end-of-life care, and intergenerational social justice.	Related	Course integrates the social aspects of sustainability by examining aging in diverse community contexts.

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GRAD	PSYC	6810	47	Psychology	Health Campaigns: Effects and Processes (Formerly 47.681)	The intent of this course is to provide the student with a thorough understanding of the effects and processes of health campaigns -- including theoretical foundations, empirical findings, and practical applications. The emphasis will be on applying this information to diverse aspects of human health, including individual physical and mental health as well as the broader fabric of public health and societal functioning. As the course evolves, students will apply and extend the course concepts through critical analysis of existing health campaigns and through the design of a proposed campaign of their choosing.	Related	Course is related to the importance of health campaigns within communities.
GRAD	ACCT	6220	60	Accounting	Globalization and Accounting (Formerly ACCT/60.622)		Related	Globalization and the social, cultural, and economic implications it entails has a significant impact on the accounting practices needed to support businesses.
GRAD	POMS	6020	63	Operations and Information Systems	Global Supply Chain (Formerly POMS 602)		Related	Course examines global operations and the impact on economies and national communities.
GRAD	POMS	7020	63	Operations and Information Systems	Global Supply Chain Management (Formerly 63.765/POMS 702)	This course provides a foundation on global supply chain management (GSCM) for the Ph.D. program. The course explores the interconnections and dependencies among marketing, finance, operations, and information systems with respect to GSCM. It covers topics related to the design of global facility networks, logistical planning across borders, and financial and accounting considerations such as duties, tax differentials, and exchange rates. In addition, the course will analyze the benefits and risks associated with outsourcing and offshoring and explore the importance of information technology and Enterprise Resource Planning (ERP) in managing global supply chains. Finally, it will address recent trends in designing sustainable supply chains and managing financial, economic, and political risk throughout the supply chain. Students will be assessed through research papers and exams.	Related	Course examines global operations and the impact on economies and national communities.
GRAD	MGMT	5110	66	Management	Global Enterprise and Competition (Formerly MGMT/66.511)	To be taken as last course in foundation core. Is an integrated investigation of global competitive issues to help students understand the processes of organization and technological innovation which permit businesses to achieve competitive advantages in a global environment. This course also deals with the nature and techniques of industry analysis necessary to the formulation of effective global strategy for the firm.	Related	Course examines factors that contribute to competitive and sustainable organizations in a global environment.
GRAD	MGMT	7430	66	Management	Leadership & Ethics (Formerly MGMT/66.743)	This course will focus on ethics as it pertains to organizational leaders. Theoretical principles underlying business ethics, specifically as it related to organizational leaders will be addressed, such as the role leaders play in establishing ethics within the organization, the manner in which ethics impacts top management team decision making, and ethical culture.	Related	Course relates to the cultural and ethical aspect of sustainability.
GRAD	MGMT	7840	66	Management	Country/regional Studies Seminar (Formerly MGMT/66.784)	This class would primarily be an onsite placement in a country/region worked out between the student and their advising committee. Prior to the onsite placement, student would go through an in-depth review of issues related to the overseas placement: economic, technical, financial, management, political, legal, organizational formalities and issues. Of particular importance would be a demonstration of language skills necessary to work successfully in the specific area of the world.	Related	Course is an onsite placement in country/region and is focused on examining economic, financial, political and organizational issues in that country/region.
GRAD	CHEM	5630	84	Chemistry	Chemistry Of Natural Products (Formerly 84.563)	Covers the proof of structure of various types of natural products, approaches to the total synthesis of these products and the biosynthetic pathways.	Related	Course integrates the environmental aspect of sustainability via examination of the structure and synthesis of natural products.
GRAD	POLY	5110	97	Polymer Science	Biopolymers (Formerly 97.511)	Topics include conformation and configuration of vinyl polymers and polypeptides, energetics of chain folding and examination of the forces dictating ordered structures, helix to coil transitions in biopolymers with emphasis on polypeptide structures, instrumental analysis of biopolymer conformation, synthesis of biopolymers including polypeptides, polysaccarides and polynucleotides, and examination of relationships between synthetic polymers and naturally occurring polymers.	Related	Course integrates polymers and polypeptides to the economic-environmental dynamic of sustainability.
UGRD	AMST	2740	American Studies	College of Fine Arts, Humanities and Social Sciences	Literature of Beat Movement (Formerly 40.274)	A survey of fiction and poetry by Beat Movement authors, including Lowell native Jack Kerouac, Allen Ginsberg, William Burroughs, Herbert Huncke, Gregory Corso, and Lawrence Ferlinghett	Related	Course relates to the influence of 1950s Beat Movement authors on social and ethical consciousness.

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UGRD	ARHI	3530	Art History	College of Fine Arts, Humanities and Social Sciences	History of Public Art in the Modern Era (Formerly 58.353)	This course serves as an introduction to the history of public art in the modern and contemporary world. The history of public art is examined in relation to such concerns as the definition of public space, community involvement in the creative process, the institutional and economic support system for the arts, the modern understanding of memorial sculpture, and the use of the visual arts to foster public dialogue and cultural exchange.	Related	Course examines modern and public art as an expression of current political and societal ideas. Integrates social/cultural aspects of sustainability.
UGRD	ARHI	3130	Art History	College of Fine Arts, Humanities and Social Sciences	American Art (Formerly 58.313)	The study of American painting, sculpture, and architecture from the Colonial period to the end of the nineteenth century seen in relation to European developments and American social and technological changes. Emphasis is placed on New England architecture.	Related	Course examines the correlation between American art and societal changes and movements and integrates the social/cultural aspects of sustainability in art.
UGRD	ARHI	2210	Art History	College of Fine Arts, Humanities and Social Sciences	Twentieth Century Art (Formerly 58.221)	A study of American and European movements in painting, sculpture, and architecture from 1900 to the end of the millenium. Emphasis is placed on Fauvism, Cubism, Expressionism, Surrealism, International Style, Pop, Op Art, Minimal Art, Photorealism, and Post-Modernism.	Related	Course examines art as it progresses over time and the impact it has on society including social/cultural aspects of sustainability.
UGRD	ARHI	2060	Art History	College of Fine Arts, Humanities and Social Sciences	History of Architecture (Formerly 58.206)	A survey of the major technical and stylistic developments in ecclesiastical and secular architecture from Prehistory to the present day studied with an emphasis on the major monuments (Parthenon, Pantheon, Gothic Cathedrals, St. Peter's, Versailles Palace, Eiffel Tower, Guggenheim Museum). Spring, alternate years.	Related	Course evaluates the history of architecture and the role it plays in past and current societies and social/cultural influence on major monuments.
UGRD	ARHI	3500	Art History	College of Fine Arts, Humanities and Social Sciences	Post Modernism (Formerly 58.350)	Following the Second World War, artists transformed the avant-garde tradition of their European predecessors to establish a dialogue with the mass media and consumer culture that has resulted in a wide array of artistic movements. Issues ranging from multiculturalism and gender to modernism and postmodernism will be addressed through the movements of abstract expressionism, pop, minimalism, neo-expressionism and appropriate in the diverse media of video, performance and photography, as well as painting and sculpture.	Related	Course evaluates the transformations in societal movements following World War II, along with the development of mass media. Integrates social/cultural aspects of sustainability.
UGRD	ARHI	3140	Art History	College of Fine Arts, Humanities and Social Sciences	American Architecture (Formerly 58.314)	This course begins with a discussion of native American building traditions and proceeds chonologically from the 17th through the 20th centuries. Students will gain a familiarity with the major movements in American architecture (such as Colonial, Greek Revival, Victorian, Arts and Crafts, City Beautiful, International Style, Postmodern) as well as the leading archiects such as Frank Lloyd Wright and Frank Gehry. The architecture is discussed in its historical context with attention to the inventions, materials and aesthetic assumptions that made it possible.	Related	Course examines the history and changes of American architecture in relation to the social/cultural aspects of sustainability and social movements.
UGRD	ARHI	3150	Art History	College of Fine Arts, Humanities and Social Sciences	Modern Architecture (Formerly 58.315)	This course will examine global architecture from the 19th century to the present. It addresses the major movements, ""-isms"", architects, publications, schools, and technological innovations that contributed to varied (and often conflicting) notions of ""Modern architecture."" Growing nationalism and politics, travel and colonial occupation, the effects of war, and changing conceptions of nature and science, all transformed the built environment. This course will provide a better understanding not only of individual works but also of the ways architecture manifests important themes such as nationalism, regionalism, functionalism, rationalism, and the most current theme, happiness.	Related	Course integrates the social/cultural and science/natural world aspects of sustainability in modern architecture.
UGRD	AEST	2210	Art/Aesthetics & Critical Stdy	College of Fine Arts, Humanities and Social Sciences	20th Century Art (Formerly 79.221)	A study of American and European movements in painting, sculpture, and architecture from 1900 to the present. Emphasis is placed on Fauvism, Cubism, Expressionism, Surrealism, International Style, Pop, Op Art, Minimal Art, Photorealism, and Post-Modernism.	Related	Course integrates the social/cultural aspects of sustainability through the analysis of painting, sculpture and architecture from 1900 to the present.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	AEST	2410	Art/Aesthetics & Critical Stdy	College of Fine Arts, Humanities and Social Sciences	Art Serving Political, Religious, & Social Needs (Formerly 79.241)	This course studies cultural and artistic production for political, religious and social education aims. The objectives are to study the production of meaning in paintings and frescos, sculpture, stained glass, architecture and other art forms that were commissioned through the church and state patronage system; to analyze how these images are used to represent and define social order; how these images support the recording and interpretation of history and support the educational, inspirational, and propagandistic aims of church and state; and to introduce students to the visual and critical language of are produced at this time.	Related	Course examines the relationship between art and the socio-political and cultural aspects of sustainability in art.
UGRD	AEST	2250	Art/Aesthetics & Critical Stdy	College of Fine Arts, Humanities and Social Sciences	History of Photography (Formerly 79.225)	Less than 200 years old, photography seems to span millennia. With 1839 as the invention's launch date, there is no photograph of George Washington, but very soon we are flooded with the faces of composers, painters, and presidents: we know and are reminded of the ravages of civil and world wars, industrial progress and social injustice, or the beauty of pristine landscapes and their ecological demise. In this course, students will become familiar with some 100 notable photographers, from the beginning years of its invention to contemporary times with works by major artists and forgotten visionaries, all serving as a foundation for inspiration and understanding of the art worlds most visible medium. Grading in the course is based on a mid-term and final exam along with a major research paper.	Related	The focus on social injustice, industrial progress and civil/world wars relates to the social-economic and social-environmental element of sustainability.
UGRD	AEST	3800	Art/Aesthetics & Critical Stdy	College of Fine Arts, Humanities and Social Sciences	Understanding Movies: Cinema as Social Commentary (Formerly 79.380)	This film theory seminar has several main objectives: to study the production of meaning in films; to analyze how moving images are used in social representation; and to introduce students to the visual and critical language of cinema. In this course, we will view a series of films by international authors. These address some of the most pressing issues of today's global world such as identity, subjectivity, difference and otherness, race relations, representations of gender and sexuality, immigration, war, colonialism and post-colonialism, poverty, and social inequalities. The films that we watch will be studied not as isolated cinematic texts but as illustrations and examples of theories of representation. Students will develop their critical analysis skills by being introduced to theoretical concepts such as ""the gaze"" in art and cinema as well as formal elements such as mise-in-scene, cinematography, editing, and sound.	Related	Course relates the relationship of film to pressing global issues including social, economic and cultural aspects of sustainability in film.
UGRD	ASAM	2120	Asian American Studies	College of Fine Arts, Humanities and Social Sciences	Introduction to Asian American Studies	This course provides students with an overview of the multidisciplinary field of Asian American Studies from two distinct disciplines. The course begins with the history of Asian American Studies and the methods used to advance the field. Next, various aspects of the Asian American experience, such as gender and sexuality, are examined. Students also participate in service learning in partnership with Asian-serving community organizations in and around Lowell, MA.	Related	Course integrates cultural and social justice aspects of sustainability via historical processes and sociocultural phenomena that define Asian-American populations in the U.S.
GRAD	ATMO	5710	Atmospheric Science	Kennedy College of Sciences	Air Pollution Phenomenology (Formerly 85.571)	The course centers on transport, dispersion and transformation of air pollutants in the atmosphere. Atmospheric structure and dynamics are reviewed. The atmospheric dispersion equation is developed for instantaneous and steady-state releases of pollutants, including the Gaussian Plume Equation for point, line and area sources. The sources and transport of particulate matter are discussed, including haze and visibility impairment. Other topics are photooxidants (ozone), acid deposition, stratospheric ozone depletion and the greenhouse effect.	Related	Class focuses on dispersion of air pollution in the environment and examines the greenhouse gas effect leading to climate change.
GRAD	ATMO	5150	Atmospheric Science	Kennedy College of Sciences	Atmospheric Structure and Dynamics (Formerly 85.515)	The temperature, pressure and density structure of the atmosphere are reviewed, as well as the chemical composition. Topics include atmospheric and solar radiation, atmospheric heat budget and the hypsometric equation. Dynamics of the atmosphere explores the behavior of fluids on a rotating earth, global circulation, synoptic scale motions, perturbation theory of wave motions. Elements of climatic change and the effects of anthropogenic emissions on climate and weather will also be discussed.	Related	Course includes discussion of the elements of climate change and the effects of anthropogenic emissions on climate and weather.

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UGRD	ATMO	1410	Atmospheric Science	Kennedy College of Sciences	Weather and Climate (Formerly 85.141)	Serves as a general meteorology course for the non-science major. Topics include: atmospheric composition, solar radiation, temperature, moisture and condensation relationship between air pressure and wind, weather patterns, severe weather, optical phenomena in the atmosphere, and the behavior and possible change of climate.	Related	Course offers an understanding of basic principles of the atmosphere, severe weather and climate change.
UGRD	ATMO	1430L	Atmospheric Science	Kennedy College of Sciences	Weather and Climate Laboratory (Formerly 85.143)	The laboratory encourages students to apply knowledge from the lectures to a variety of atmospheric and climatic phenomena developed from data analysis, experimentation, and maps. Synthesis and critical thinking are encouraged in the solution of problems.	Related	Lab offers a comprehensive analysis of weather and climate.
UGRD	ATMO	3130	Atmospheric Science	Kennedy College of Sciences	Physical Climatology (Formerly 85.313)	Atmospheric processes determining the climate: solar and terrestrial radiation, elevation and thermal properties of surfaces, atmospheric circulations and eddy conduction between the atmosphere and land or sea surfaces, heat and water balance of earth's surface and the atmosphere; hydrologic cycle; and climatic simulation models.	Related	Course focuses on the relationship between the atmosphere and the climate, specifically human impact on the atmosphere.
UGRD	ATMO	3400	Atmospheric Science	Kennedy College of Sciences	Tropical Meteorology (Formerly 85.340)	An introduction to the tropical atmosphere including tropical climatology, structure and dynamics of easterly waves, tropical cyclones and monsoonal circulations.	Related	Class relates to the dynamics of the tropical climate and how it differs with others around the world.
UGRD	ATMO	4710	Atmospheric Science	Kennedy College of Sciences	Air Pollution (Formerly 85.471)		Related	Understanding the impacts of air pollution within the wider context of air resource management is critical to sustainability.
UGRD	ATMO	4200	Atmospheric Science	Kennedy College of Sciences	Introduction to Operational Numerical Weather Prediction (Formerly 85.420)	In this class, the student will learn the structure and science behind modern numerical weather prediction models and how to use them to solve real-world issues facing modern meteorological consultants. The student will learn how to operate and apply a modern numerical weather prediction model to study such issues as offshore wind farm siting, solar power prediction, and energy load forecasting. Students should be prepared to use Linux-based PC's (supplied) to perform and submit projects.	Related	Course integrates climate and renewable energy aspects of sustainability by exploring ways to operate and apply weather prediction models for specific applications such as renewable energy siting and prediction.
UGRD	BIOL	2100	Biological Science	Kennedy College of Sciences	Biology for Engineers (Formerly 81.210)	Develops a basic understanding of the science of biology for engineering students, including and introduction to biochemistry, cell biology, metabolism, genetics, genomics, molecular biology, cell growth, and nutrition. Both eukaryotic and prokaryotic biology will be covered.	Related	Course examines the relationship between biology and engineering in a sustainable way.
UGRD	BIOL	2120L	Biological Science	Kennedy College of Sciences	Biology for Engineers Laboratory (Formerly 81.212)	This laboratory course will build on 81.210. It will provide an introduction to several basic biological techniques and approaches used in biological engineering laboratories.	Related	Lab will introduce engineering students to the application of biology in the engineering industry.
UGRD	BIOL	4260	Biological Science	Kennedy College of Sciences	Evolutionary Biology (Formerly 81.426)	Examines the patterns and processes of biological evolution that have led to the diversity of life. Topics covered include the history of evolutionary thought, the evidence for evolution, the generation and maintenance of population-level variation, natural selection, adaptation, sexual selection, speciation, phylogenetics, molecular evolution, the fossil record and extinctions. In addition to lecture and textbook material, students will read and discuss classic and contemporary primary literature from evolutionary biology.	Related	Course covers the basic aspects of evolution through a sustainable lens.
UGRD	BIOL	3200	Biological Science	Kennedy College of Sciences	Botany (Formerly 81.320)	Serves as an introduction to the study of the plant kingdom dealing with the structure, function, and diversity of plants with an emphasis on seed plants. The physiology, morphology, and taxonomy of plants is emphasized.	Related	Introductory course relates the correlation between plants and the environment.
UGRD	BIOL	3220L	Biological Science	Kennedy College of Sciences	Botany Laboratory (Formerly 81.322)	Emphasizes material covered in 81.320 using field and laboratory exercises.	Related	Introductory course relates the correlation between plants and the environment.
UGRD	BIOL	3240	Biological Science	Kennedy College of Sciences	Economic Botany (Formerly 81.324)	Discussions on how humans use plants. Topics will include: Structure and characteristics of woods and their uses in construction of various items, agricultural uses of food plants and spices, poisonous plants, medicinal plants, plants used in religious ritual and plants used as hallucinogens, plants that have altered human history.	Related	Course integrates the social, environmental and economic aspects of sustainability through evaluation of how humans use plants and how they have altered human history.
UGRD	BIOL	3150	Biological Science	Kennedy College of Sciences	Principles of Ecology (Formerly 81.315)	A series of lectures concerned with the interrelationships of organisms with their abiotic environment with emphasis on the New England area. Selected current topics will supplement the text.	Related	Course examines the relationships between organisms and the environments in which they live.

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UGRD	BIOL	3170L	Biological Science	Kennedy College of Sciences	Principles of Ecology Laboratory (Formerly 81.317)	A series of laboratory exercises to supplement and illustrate lectures of 81.315. Field trips are an integral part of the course involving sampling and analysis of such ecosystem components as water, soil, invertebrate fauna and characteristic flora of various habitats. Directed readings, quizzes, practical exam and oral presentation of a research topic are integral parts of the course.	Related	Course provides gain hands on experience involving organisms and their relationships to the environment.
UGRD	BIOL	1220	Biological Science	Kennedy College of Sciences	Biology for Health Sciences (Formerly 81.122)	Develops a basic understanding of biological topics relevant to students in the health sciences. Course will introduce students to biochemistry, cell biology, cellular respiration, cell replication, genetics, inheritance and molecular biology. Introduction to prions, viruses, prokaryotic and eukaryotic biology will also be covered.	Related	Students will gain an understanding of the relationship between basic biology, the environment, and the social aspect of sustainability.
UGRD	BIOL	1240L	Biological Science	Kennedy College of Sciences	Biology for Health Sciences Lab (Formerly 81.124)	Develops a basic understanding of biological topics relevant to students in the health sciences. Course will introduce students to biochemistry, cell biology, cellular respiration, cell replication, genetics, inheritance and molecular biology, Introduction to prions, viruses, prokayotic and eukaryotic biology will also be covered.	Related	Students will gain an understanding of the relationship between basic biology, the environment, and the social aspect of sustainability.
UGRD	BIOL	1110	Biological Science	Kennedy College of Sciences	Principles of Biology I (Formerly 81.111)	Introduces topics such as the chemical and physical basis of life, its evolution, diversity, distribution, and interrelationships of life forms. The central theme of genetic replication, translation, expression, and selection will be emphasized as a unifying principle which determines and integrates structure and function at the cellular, individual population, and community levels of organization. Designed for those students who intend to pursue career options in the biological sciences, biotechnology or related areas such as medicine, biomedical research, radiological sciences or environmental sciences. It is the first-semester course of a two-semester sequence.	Related	Class introduces students to relationships between life forms and the environment.
UGRD	BIOL	1120	Biological Science	Kennedy College of Sciences	Principles of Biology II (Formerly 81.112)	Serves as a continuation of the 81.111/81.112 sequence for those students who intend to pursue career options in the biological sciences or related professional areas such as medicine, biomedical research or environmental sciences. Molecular energy exchange in organisms (photosynthesis and respiratory metabolism), the common functional needs of support, locomotion, nutrition, internal communication and the maintenance of homeostasis are considered. Control and regulation of organisms at levels beyond the individual are considered through discussions of population and community ecology.	Related	Aspects of biology including medicine and environmental science are examined through a sustainable lens.
UGRD	BIOL	1160	Biological Science	Kennedy College of Sciences	Freshman Seminar in Biology (Formerly 81.116)	This course is designed to acclamate incoming students to their new University environment. Students will learn about the Biology program, its faculty and staff members, University resources, and other information useful for success.	Related	Course includes discussion of University's environmental programs and benefits, resources and ways to get involved.
UGRD	BIOL	4400	Biological Science	Kennedy College of Sciences	Advances in Plant Biology (Formerly 81.440)	Examination of a range of topics in plant biology with an emphasis on processes that are unique to plants. The course will focus first on the role of plants in human affairs, and basic plant anatomy, physiology and genetics followed by three or more topics at an advanced level. Typical focus areas may include biosynthesis and regulation of fatty acids, metabolism of aromatic amino acids, studies of pathways leading to the synthesis of useful natural plant products and the genetic manipulation of plants to promote plant improvement.	Related	Course relates plant biology to human life and sustainability.
UGRD	LIFE	1010	Biology/Life Science	Kennedy College of Sciences	Life Science I (Formerly 83.101)	Presents environmental and organismal structural interrelationships and relates these to the chemical evolutionary basis of life.	Related	Course examines relationships between environments and organisms.
UGRD	LIFE	1020	Biology/Life Science	Kennedy College of Sciences	Life Science II (Formerly 83.102)	Emphasis is on systems structure and function. The cellular organization of plants and animals leads into physiological processes of higher organisms with great emphasis on humans. Among topics considered are nutrition and digestion, cellular metabolism, circulation, respiration, excretion, nervous and skeletal-muscular systems. Also considered are the chemical interactions of these systems with immunity, hormonal and reproductive processes.	Related	Course focuses on how certain environments shape organisms.
UGRD	LIFE	1040L	Biology/Life Science	Kennedy College of Sciences	Life Science II Laboratory (Formerly 83.104)	Involved with experimentation and interpretation of some of the concepts of Life Science II.	Related	Course experiments with concepts discussed in Life Science II.

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UGRD	LIFE	1100	Biology/Life Science	Kennedy College of Sciences	Microbes and Society: Good, Bad and Ugly (Formerly 83.110)	Examines historical aspects of microbial interactions with human society, including the use of microbes in food production, agriculture, biotechnology, industry and environmental preservation; explores bioterrorism, the problem of antibiotic resistance and surveys some historical and contemporary microbial diseases.	Related	Course relates the microbial interactions with humans and the impact on health.
GRAD	CHEN	5290	Chemical Engineering	Francis College of Engineering	Recent Advances in Nanotechnology and Green Chemistry (Formerly 10.529)	This course is designed to expose students to a variety of concepts in chemistry and challenge them to think critically about experiments used to interrogate these concepts. Organic polymer chemistry with an emphasis on electronically conducting polymers will be the main area of focus. Students would first be introduced to scientific subject matter outside their realm of familiarity and be expected to identify new concepts and links to existing experimental paradigms. The course is divided into 3 parts: (i)introduction to nanothehnology and green chemistry with a focus on nanoscale electronic polymers, (ii) green chemistry and the overlap area with nanotechnology, and (iii) green engineering.	Related	Course focuses on concepts of organic polymer chemistry and the application of green chemistry and green engineering to interrogate these concepts.
GRAD	CHEN	5120	Chemical Engineering	Francis College of Engineering	Industrial Chemistry (Formerly 10.512)	Survey of the major sources and uses of chemicals, industrial chemical processes, fundamental raw materials, and career paths available in the chemical industry. More intensive treatment of selected industrial processes with emphasis of green/sustainable chemical processes.	Related	Course incorporates environmental aspect of sustainability via evaluation of green/sustainable chemical industrial processes.
UGRD	CHEN	4090	Chemical Engineering	Francis College of Engineering	Engineering Economics and Process Analysis (Formerly 10.409)	This course brings together all the Chemical Engineering core principles applied to the development of economic process designs. Economic evaluations of manufacturing operations and projects including essential concepts in accounting, depreciation, time value of money, and the evaluation of investment alternatives are applied for process analysis and design objectives. The impact of management and production costs, product markets, regulatory, environmental and safe production practices, the analysis of corporate annual reports including balance sheets and income statements, and capital and operating costs are all considered in regard to efficient and economic processes. In addition to lecture materials students are required to complete comprehensive projects.	Related	Course integrates the economic and environmental, health & safety aspects of sustainability via the application of chemical engineering principles to the development of process designs.
UGRD	CHEN	1010	Chemical Engineering	Francis College of Engineering	Technology and Human Built World (Formerly 10.101)		Related	Managing the built environment is a critical component of sustainability
UGRD	CHEN	2050	Chemical Engineering	Francis College of Engineering	Fundamentals of Electricity (Formerly 10.205)	An introduction to direct current and alternating current of electric circuits with emphasis on practical application.	Related	Fundamentals of electricity are examined to better understand its impact on economic and environmental sustainability.
UGRD	CHEN	4050	Chemical Engineering	Francis College of Engineering	Design Of Papers (Formerly 10.405)	Fundamentals of the mechanical and optical testing of paper and allied products. Discussion of engineering mechanics involved in various testing procedures. Statistical analysis of test data. Structure of materials revealed by physical tests. Laboratory projects designed to illustrate problems in development of paper products and associated required processes.	Related	Engineer and develop solutions to the current problems with paper product processes. Environmentally friendly process including sustainable procedures.
UGRD	CHEM	1210	Chemistry	Kennedy College of Sciences	Chemistry I (Formerly 84.121)	Provides an introduction to the basic concepts of chemistry through classroom discussions and demonstrations. Topics include chemical calculations, atomic structures, the periodic table, basic bonding theory, solutions, liquids, and gases. Restricted to science, engineering, and engineering technology majors.	Related	Aspects of chemistry including organic chemistry and engineering relate to environmental factor of sustainability.
UGRD	CHEM	1220	Chemistry	Kennedy College of Sciences	Chemistry II (Formerly 84.122)	Serves as a continuation of 84.121. Topics include thermodynamics; kinetics, acids and bases; an introduction to organic chemistry; chemical equilibrium; precipitation reactions; and electrochemistry. Restricted to science, engineering, and engineering technology majors.	Related	Topics include organic chemistry which plays a vital role in sustainability.
UGRD	CHEM	1350	Chemistry	Kennedy College of Sciences	Honors Chemistry I (Formerly 84.135)	A more in-depth view of the topics covered in Chemistry I, (84.121). Topics include chemical reactions and calculations, atomic history and structures, the behavior of gases and bonding theory. Open to students enrolled in the Honors Program, and may be taken instead of 84.121.	Related	Course offers a comprehensive understanding of chemistry and its correlation to aspects of sustainability.
UGRD	CHEM	1360	Chemistry	Kennedy College of Sciences	Honors Chemistry II (Formerly 84.136)	A continuation of 84.135. A more in-depth view of the topics covered in Chemistry II (84.122). Topics include solutions, kinetics, thermodynamics, acids and bases, chemical equilibrium, electrochemistry and solubility. Open to students enrolled in the Honors Program, and may be taken instead of 84.122.	Related	Course relates aspects of chemistry that impact a sustainable environment.

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UGRD	CHEM	1230L	Chemistry	Kennedy College of Sciences	Chemistry I Laboratory (Formerly 84.123)	Studies experimental chemical principles and chemical transformation that is coordinated with topics considered in 84.121. Some of the more important reactions of elements, oxides, acids, bases, and salts are examined. Other topics include chemical separation, purification, preparation of inorganic salts, quantitative determinations dealing with the formula of a compound, gas laws, and colligative properties. Careful techniques and precise measurements are stressed. Restricted to science, engineering, and engineering technology majors	Related	Class integrates chemical engineering experiments to sustainable practices.
UGRD	CHEM	1240L	Chemistry	Kennedy College of Sciences	Chemistry II Laboratory (Formerly 84.124)	Serves as a continuation of the laboratory study begun in 84.123 that is coordinated with topics of 84.122. Topics include: thermochemistry, kinetics, spectroscopy, titration, pH, equilibrium reaction and constants. Some aqueous solution reactions and organic reactions are examined. Accurate measurements and precise instrumental and apparatus operation are expected. Restricted to science, engineering, and engineering technology majors.	Related	Course provides provides a deeper understanding of the relationship between factors of chemistry and sustainability.
UGRD	CHEM	2040	Chemistry	Kennedy College of Sciences	Introduction to Organic and Polymer Chemistry (Formerly 84.204)	This course is a one-semester overview of organic chemistry for plastics engineering majors. Organic chemistry and its associated principles underscore a broad component of the plastics engineering curriculum. It is desirable therefore for such students to develop a basic appreciation of the fundamental reactions in organic chemistry, as well as an understanding of the interaction of organic compounds with their environment. Students will therefore be expected to secure a basic undersanding of, e.g., chemical bonding, the chemistry of alkanes, alkenes, alkynes, aromatic compounds, substitution and elimination reactions, reactions of organic alcohols, ethers, epoxides, aldehydes and ketones, carboxylic acids, and amine compounds. When appropriate, examples will be provided that relate to those typical polymerization reactions (e.g. free-radical or ionic) employed to manufacture commercial polymer materials. Coverage will include synthesis of organic chemicals and polymers from natural and sustainable materials.	Related	Course provides students with an understanding of how organic compounds interact with the environment and also includes synthesis of organic chemicals from sustainable materials.
UGRD	CHEM	1010	Chemistry	Kennedy College of Sciences	Applied Chemistry for Non-Scientists (Formerly 84.101)	Provides an understanding of basic chemical principles -- atomic structure, bonding and interparticle forces, physical and chemical properties of matter through hands-on examination of matter and the application of principles to understanding the chemistry of current issues (e.g., environmental chemistry, biochemistry, food and drug chemistry) and the analysis of problems dealing with these issues.	Related	Course integrates the application of basic chemical principles to environmental issues and discussion of problems address these issues to maintain a sustainable environment.
GRAD	CIVE	5270	Civil Engineering	Francis College of Engineering	Geotechnical and Environmental Site Characterization (Formerly 14.527)	This course is designed to give students a comprehensive understanding of various site investigation and site assessment technologies employed in geotechnical and environmental engineering. The course begins with introduction to site investigation planning and various geophysical methods including: seismic measurements, ground penetrating radar, electrical resistivity, electromagnetic conductivity, time domain reflectometry. Drilling methods for soil, gas and ground water sampling; decontamination procedures; and long term monitoring methods are studied. Emphasis in this course is placed on conventional and state-of-the-art in situ methods for geotechnical and environmental site characterization: standard penetration test, vane shear test, dilatometer test, pressuremeter test and cone penetration tests. Modern advances in cone penetrometer technology, instrumented with various sensors (capable of monitoring a wide range of physical and environmental parameters: load, pressure, sound, electrical resistivity, temperature, PH, oxidation reduction potential, chemical contaminants) are playing a major role in site characterization. Principles underlying these methods along with the interpretation of test data will be covered in detail. The course will also look into emerging technologies in the area of site characterization. (3-0)3	Related	Course focuses on investigative technologies used in environmental engineering. Methods examined relates to sustainable and environmental practices.

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GRAD	CIVE	5400	Civil Engineering	Francis College of Engineering	Urban Transportation Planning (Formerly 14.540)	Objectives and procedures of the urban transportation planning process. Characteristics and current issues of urban transportation in the United States (both supply and demand). Techniques of analysis, prediction and evaluation of transportation system alternatives. Consideration of economic, environmental, ethical, social and safety impacts in the design and analysis of transportation systems.	Related	Course integrates economic, environmental, ethical, social and safety impacts in urban transportation planning and design.
GRAD	CIVE	5760	Civil Engineering	Francis College of Engineering	GIS Applications in Civil and Environmental Engineering (Formerly 14.576)	This course is to introduce students to the basic concepts of Geographic Information Systems (GIS) and GIS applications in Civil and Environmental Engineering. Topics to be covered include GIS data and maps, queries, map digitization, data management, spatial analysis, network analysis, geocoding, coordination systems and map projections, editing. Examples related to transportation, environmental, geotechnical and structural engineering will be provided to help students better understand how to apply GIS in the real world and gain hands-on experience. This course will consist of lectures and computer work.	Related	GIS in relation to civil and environmental engineering is a critical tool to conveying and understanding sustainability concepts through real world applications.
GRAD	CIVE	5420	Civil Engineering	Francis College of Engineering	Transportation Network Analysis (Formerly 14.542)	This course is to introduce engineering students to basic transportation network analysis skills. Topics covered include fundamentals of linear and nonlinear programming, mathematical representations of transportation networks, various shortest path algorithms, deterministic user equilibrium traffic assignment, stochastic user equilibrium traffic assignment, dynamic traffic assignment, heuristic algorithms for solving traffic assignment problems, and transportation network design.	Related	Course examines the transportation network through a sustainable lense.
GRAD	CIVE	5430	Civil Engineering	Francis College of Engineering	Traffic Principles for Intelligent Transportation Systems (Formerly 14.543)	The objective of this course is to introduce the student to the traffic principles that are pertinent for the planning, design and analysis of Intelligent Transportation Systems (ITS). The course is oriented toward students that come from different disciplines and who do not have previous background in traffic or transportation principles. It is designed as an introductory course that will enable the student to pursue more advanced courses in transportation systems subsequently.	Related	Course integrates transportation options and the related economic and environmental aspects of sustainability.
GRAD	CIVE	5440	Civil Engineering	Francis College of Engineering	Transportation Economics and Project Evaluation (Formerly 14.544)	The course offers an overview of the fundamental principles of transportation economics. Emphasizes theory and applications concerning demand, supply and economics of transportation systems. Covers topics such as pricing, regulation and the evaluation of transportation services and projects. Prerequisites: Students should have knowledge of transportation systems and basic microeconomics.	Related	Course integrates transportation options and the related economic aspect of sustainability.
GRAD	CIVE	5450	Civil Engineering	Francis College of Engineering	Public Transit Plan and Design (Formerly 14.545)	Planning and design of public transportation systems and their technical, operational and cost characteristics. Discussion of the impact of public transportation on urban development; the different transit modes, including regional and rapid rail transit (RRT), light rail transit (LRT), buses, and paratransit, and their relative role in urban transportation; planning, design, operation and performance of transit systems (service frequency and headways, speed, capacity, productivity, utilization); routes and networks; scheduling; terminal layout; innovative transit technologies and their feasibility.	Related	Course integrates transportation options and the related economic and environmental aspects of sustainability.
GRAD	CIVE	5700	Civil Engineering	Francis College of Engineering	Wastewater Treatment and Storm Water Management Systems (Formerly 14.570)	The era of massive subsidies for construction of sanitary sewers and centralized, publicly operated treatment works (POTWs) has passed. Non - point pollution from sources such as onsite disposal systems has become a major focus of concern in our efforts to protect and improve ground and surface water quality. Much of the new construction in areas not already served by centralized collection and treatment must use the alternative technologies. This course is design oriented. The variously available technologies are studied in depth. Students evaluate various technologies as they may be applied to a complex problem for which information is available, and develop an optimum problem solution.	Related	Principles, processes, impacts, and control of nonpoint source pollution of surface and groundwater.
UGRD	CIVE	3330	Civil Engineering	Francis College of Engineering	Geotechnical Laboratory (Formerly 14.333)	Laboratory experience that illustrates soil mechanics and fluid flow theory. Experiments are conducted in the soils and hydraulics laboratories. Course emphasizes data acquisition and analysis and writing engineering reports.	Related	Lab conducts soil experiments focusing on chemical composition and data acquisition used for sustainable research.

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UGRD	CIVE	4310	Civil Engineering	Francis College of Engineering	Foundation and Soil Engineering (Formerly 14.431)	The application of soil mechanics to the design and analysis of foundations and soil structures. Topics include: soil origin and deposition, subsurface exploration, bearing capacity and settlement analyses, design of shallow foundations, earth pressures, retaining structures, and slope stability.	Related	Basic foundations of soil engineering links to sustainable agriculture.
UGRD	CIVE	4700	Civil Engineering	Francis College of Engineering	Engineering Economics (Formerly 14.470)	Presentation of mathematical principles of economic analysis, with emphasis on defining alternatives and predicting consequences of proposed investments. Emphasis is placed on the economic, social and environmental impacts of proposed Civil Engineering projects. The attractiveness of investments is judged by present worth, annual worth, rate of return, and benefit-cost ratio techniques. Sensitivity analysis, depreciation and tax impacts in economic studies are also discussed.	Related	Course integrates the economic, social and environmental aspects of sustainability and impacts on civil engineering projects.
UGRD	CIVE	3500	Civil Engineering	Francis College of Engineering	Structural Analysis I (Formerly 14.350)	Principles of structural analysis applied to typical civil engineering structures as the initial step in the total design concept. Emphasis on the classical methods of analysis of statically determinate and indeterminate structures. The personal computer as an analytical tool.	Related	Methods of structural engineering draws a blueprint for future sustainable infrastructure.
UGRD	CIVE	3400	Civil Engineering	Francis College of Engineering	Transportation Engineering (Formerly 14.340)	Development of the basic principles pertaining to the movement of people and goods by modern transportation systems. Techno-economic characteristics of the various transportation modes. Aspects of planning, design and operation of land, air and water transportation facilities. Development, structure and function of the U.S. transportation system.	Related	Systems of transportation engineering are examined in a sustainable context.
UGRD	CIVE	3100	Civil Engineering	Francis College of Engineering	Engineering Materials (Formerly 14.310)	A treatment of the properties of engineering materials that influence the design, construction and maintenance of Civil Engineering works. Included are such materials as ferrous and non-ferrous metals, timber, asphalt, and cementitious materials. Supplemented by laboratory testing of various engineering materials.	Related	Course examines the chemical materials in engineering materials used in creating a sustainable economy. The idea of using civil engineering materials in a sustainable way is also incorporated, focusing on materials that do not lend themselves to sustainability (e.g. concrete) and those that do (e.g. wood and steel).
UGRD	CIVE	3300	Civil Engineering	Francis College of Engineering	Soil Mechanics (Formerly 14.330)	Development of the fundamental principles of soil mechanics as utilized in soil and foundation engineering. Topics include: classification, index properties, strength and stress-strain behavior, effective stress principle, permeability, flow and consolidation. Introduction to basic soil mechanics laboratory practice.	Related	Course examines soil and its various engineering parameters, such as classificaYon, permeability, compressibility, and shear strength.
UGRD	CIVE	4750	Civil Engineering	Francis College of Engineering	Construction Management I (Formerly 14.475)	Development of management skills and techniques to plan, schedule, supervise, and control construction projects. Project estimating; labor costs and productivity; construction plans, specifications and contracts; labor relations; time, cost and quality control; construction equipment and project decision making and financing.	Related	Construction management relates to the economical factor of sustainable infrastructure.
UGRD	CIVE	3110	Civil Engineering	Francis College of Engineering	Engineering Materials Laboratory (Formerly 14.311)	Experiments and written reports. Testing and measurement techniques and material standards illustrating behavior of materials, including metals, wood, and Portland cement concrete.	Related	Related to the experimentation and application of finite resources
UGRD	CIVE	3720	Civil Engineering	Francis College of Engineering	Civil Engineering Systems (Formerly 14.372)	Introduction to methods of operations research, management science and economic analysis used in the design, planning and managing of engineering systems. Main topics covered: systems modeling, optimization concepts, network analysis, mathematical programming, critical path analysis, decision analysis, economic consideration.	Related	Course integrates the economic and social responsibility aspects of sustainability in engineering systems.
UGRD	CIVE	2250	Civil Engineering	Francis College of Engineering	Surveying I (Formerly 14.225)	A presentation of the basic instruments used in survey processes including distance, angle and level measurements. Analysis and adjustment of random errors. Principles of closed and open traverses. Fieldwork practice in instrument use and office-type projects in contour mapping and the application of contoured topography to highway and water-control projects.	Related	Course relates surveying to economic and structural stability.
UGRD	CIVE	2260	Civil Engineering	Francis College of Engineering	Geomatics (Formerly 14.226)	Principles and practice of route surveys and designs. Topics include simple and compound circular curves, intersections of straight and curved baselines, vertical alignment principles including parabolic easement curves, earthwork operations and determination of volumes. Includes office-type projects illustrative of the application of surveying information to Civil Engineering projects such as water resources, sanitary sewers and property subdivision. Fieldwork instruction in basic traverse surveys, gathering of topographic information, and the staking-out of buildings and circular curves.	Related	Course relates to economic dynamics of sustainability.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	CIVE	3410	Civil Engineering	Francis College of Engineering	Transportation Engineering Laboratory (Formerly 14.341)	Practice techniques of data collection, analysis and presentation that are commonly used in the planning, design and operation of transportation facilities with primary emphasis on highway systems.	Related	Course outlines sustainable system, design, and mode of transportation.
UGRD	PUBH	2040	Community Health and Sustainability	College of Health Sciences	Intro to Health Promotion (Formerly 31.204)	This course focuses on the role health education plays in the development of healthful patterns of living. A philosophy of health education emphasizing holistic health will be generated. The organization and administration of school, community, health care facility, and workplace health education programs are introduced.	Related	Course promotes living a healthy lifestyle through education and understanding of healthful living patterns.
UGRD	ECON	2010	Economics	College of Fine Arts, Humanities and Social Sciences	Economics I (Microeconomics) (Formerly 49.201)	Studies the principles of production and exchange. An introduction to demand, supply, pricing, and output under alternative market structures. Derived demand and resource markets are introduced.	Related	Class integrates an understanding of economic sustainability including aspects related to growth, production, and distribution.
UGRD	ECON	3450	Economics	College of Fine Arts, Humanities and Social Sciences	Health Economics (Formerly 49.345)	An introduction to the economic analysis of health care market The course presents microeconomic models, empirical findings and public policies referring to the following topics: the production and demand for health (the investment/consumption aspects of health and the relationship between socio economic status and health status), the issues of moral hazard and adverse selection in the insurance market, the role of information in the physician-patient relationship, the different regulation and payment systems for providers, the Medicare and Medicaid prorams, and the comparisons between the US system and the health systems of other western economies and developing countries. This class aims to help students becoming more informed future citizens and consumers or producers of healthcare.	Related	Course focuses on an overview of the economic implications of the U.S health care systems.
UGRD	ECON	3190	Economics	College of Fine Arts, Humanities and Social Sciences	Public Finance (Formerly 49.319)	The economics of the public sector. Principles of public expenditure, taxation, and the public debt applied to federal, state, and local governments.	Related	Course explores dynamics of the global sector, specifically the economics.
UGRD	ECON	4030	Economics	College of Fine Arts, Humanities and Social Sciences	International Trade Theory (Formerly 49.403)	The classical and modern theories. International payments, exchange and trade controls, and international trade policy determinants. Prerequisites: 49.201, 49.202.	Related	Course examines theories related trade both domestic and international.
UGRD	ECON	3020	Economics	College of Fine Arts, Humanities and Social Sciences	Labor Economics (Formerly 49.302)	An introduction to the economic analysis of behaviors and institutions in the labor market: labor supply and participation, labor demand by firms, wage determination under different institutional settings, and gender, race or ethnicity as determinants of different labor market outcomes. The course presents microeconomic models, empirical findings and their public policy implications on topics such as minimum wage, affirmative action, social insurance prorams, workplace safety, and subsidized day care.	Related	Course focuses on the dynamics of the labor market and relating it to the social, economic, and environmental elements of sustainability.
UGRD	ECON	3060	Economics	College of Fine Arts, Humanities and Social Sciences	Urban Economics (Formerly 49.306)		Related	Economics of urban policy, pollution, and population and economic growth
UGRD	ECON	4020	Economics	College of Fine Arts, Humanities and Social Sciences	Industrial Organization (Formerly 49.402)	The field of Industrial Organization studies the behaviors of firms in imperfectly competitive markets. Its importance is best illustrated by understanding limitations of perfect competition. By definition, a perfectly competitive firm takes the market determined price as given and therefore has absolutely not control on price. Consequently, there is no room for any pricing strategy, not room for advertisement, and the firm has little incentive to conduct R&D or merge with other firms. All these business practices that we see every day must be discussed and analyzed in a setting of imperfect competition - the main focus of Industrial Organization.	Related	Course examines the competition between industrial organizations through an economic lense.
UGRD	ECON	4100	Economics	College of Fine Arts, Humanities and Social Sciences	Economic Growth and Development (Formerly 49.410)	In this course, we try to solve the puzzles of why some countries are so rich and some are so poor and why some countries grow so quickly and some grow so slowly. After introducing the basic analytical framework, we will investigate various possible reasons in explaining the oserved country differences. Those possible explanations include differences in countries' investment rates, population growth rates, human capital accumulation rates, production technologies, openness to international trade, and government policies. Issues of income inequality and their effect on economic growth will also be addressed.	Related	Course focuses on the economic dynamics that make some countries wealthy, while others struggle to catch up.

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GRAD	EDUC	5531	Education	Graduate School of Education	Lowell and Industrial Revolution (Formerly 04 553)	Participants in this National Endowment for the Humanities-sponsored Landmarks Workshop, offered through the Tsongas Industrial History Center, examine the causes and consequences of America's Industrial Revolution, using Lowell as a case study. The course covers the nineteenth-century shift from an agrarian to an industrial society, with a focus on water-powered factory systems, textile production and corporations, the issue of slavery in a cotton textile city, labor and women's history, environmental impacts, immigration, globalization, and literary responses. Limited to NEH participants only.	Related	Incorporates the social aspect of sustainability by examining slavery, labor and women's history, environmental impacts, immigration and globalization.
GRAD	EDUC	5761	Education	Graduate School of Education	Promoting Healthy Lifestyles Among Students (Formerly 04.576)	The focus of this course is on applying nutrition concepts relevant to elementary and middle school children and how these concepts can be integrated into the classroom at an age appropriate level. This course will address a broad range of issues including eating habits, disordered eating, sports nutrition, food allergies and school wellness policies.	Related	Course focuses on the social health of populations, specifically nutrition in teen and young children.
GRAD	EDUC	6040	Education	Graduate School of Education	Leadership of Community Engagement I (Formerly 05.604)	The purpose of Leadership of Community Engagement I is to expose teacher leaders to the variety of issues associated with family and community engagement. Through critical examinations of theory, personal experiences and collective knowledge, teacher leaders will learn how to engage families and community members (i.e., business, health and service agencies and community-based organizations) and recognize the different forms of engagement. This course will highlight collaborative strategies that ""shares power"" with parents, families, and community organizations in schools.	Related	Course focuses on the social dynamic of sustainability, specifically the outcomes of strong and intelligent leadership within communities.
GRAD	EDUC	6050	Education	Graduate School of Education	Leadership of Community Engagement II (Formerly 05.605)	The purpose of Leadership of Community Engagement II is to continue the conversation and exploration of family and community engagement with teacher leaders from 05.604. The second course focus is on the implementation and analysis of the Research Action Plan drafted in the firs semester. Teacher leaders will explore the challenges, barriers, successes and unintended consequences of their family and community engagement action plan. This course will highlight collaborative strategies of ""critical friend groups"" and participatory action research. Teacher leaders will lead group discussions and share ideas and strategies to help them address their family and community engagement issues.	Related	Course focuses on the social dynamic of sustainability, specifically the outcomes of strong and intelligent leadership within communities.
GRAD	EDUC	6601	Education	Graduate School of Education	Diversity in Higher Education 08.660)	Focuses on the preparation, admission, retention, and achievements of minorities in higher education, both past and present.	Related	Course explores minority education through a social lens of sustainability.
UGRD	EDUC	3840	Education	Graduate School of Education	Language, Literacy and Culture (Formerly 01.384)	The course examines the role that socio-cultural and socio-political contexts play in children's literacy development, with particular focus on English Language Learners (ELLs). The course is designed to help students understand the complex and dynamic worlds of diverse learners represented in twenty-first century classrooms. Students will learn new and effective approaches to teaching and learning that provides struggling learners, especially English Language Learners a fair and equitable chance to succeed in the learning contexts.	Related	This course incorporates the socio-political aspects of sustainability as they relate to children's literacy development.
GRAD	EECE	5410	Electrical & Computer Engineering	Francis College of Engineering	Introduction to Biosensors (Formerly 16.441/541)	This course introduces the theory and design of biosensors and their applications for pathology, pharmacogenetics, public health, food safety civil defense, and environmental monitoring. Optical, electrochemical and mechanical sensing techniques will be discussed.	Related	Course examines the relationship between biosensor technology and the possible public health benefits.
UGRD	EECE	4440	Electrical & Computer Engineering	Francis College of Engineering	Power Distribution System (Formerly 16.444)	An intermediate course in analysis and operation of electrical power distribution systems using applied calculus and matrix algebra. Topics include electrical loads characteristics, modeling , metering, customer billing, voltage regulation, voltage levels, and power factor correction. The design and operation of the power distribution system components will be introduced: distribution transformers, distribution substation, distribution networks, and distribution equipment. Prerequisite: 16.355	Related	Course covers the operations of electrical power distribution and the relationship to the economic and environmental dynamics of sustainability.
UGRD	EECE	4410	Electrical & Computer Engineering	Francis College of Engineering	Introduction to Biosensors (Formerly 16.441/541)	This course introduces the theory and design of biosensors and their applications for pathology, pharmacogenetics, public health, food safety civil defense, and environmental monitoring. Optical, electrochemical and mechanical sensing techniques will be discussed.	Related	Course integrates the environmental aspects of sustainability by examining the application of biosensors for public health and environmental monitoring.

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UGRD	EECE	2110	Electrical & Computer Engineering	Francis College of Engineering	Fundamentals of Electricity I (Formerly 16.211/213)	Serves as an introduction to direct current and alternating current analysis of electric circuits, with emphasis on energy and power. Covers design and use of multi-range voltmeters, ammeters, and ohmmeters, the use of bridges and oscilloscopes, phasor analysis of AC circuits, Trigonometric Fourier series, BODE plots, transformers, relays, solenoids, mechanical analogs and magnetic analogs with the application of Fourier and BODE techniques. Students will also be introduced to DC and AC motors and generators, residential circuits, equipment protection, and introduction to digital logic including minimization techniques. Availability and cost of instruments and components is stressed throughout this course. Not for EE majors. Engineering Science (100%).	Related	Course covers an overview of fundamental electricity and the application to suitable practices.
UGRD	EECE	2120	Electrical & Computer Engineering	Francis College of Engineering	Fundamentals of Electricity Laboratory (Formerly 16.212)	Lab for 16.211 Fundamentals of Electricity. See course description for 16.211. Not for EE majors.	Related	Course covers an overview of fundamental electricity and the application to suitable practices.
UGRD	EECE	4000	Electrical & Computer Engineering	Francis College of Engineering	Engineering Topics (Formerly 16.400)	This course introduces to the seniors developing the capstone proposal important concepts such as economics, environmental, sustainability, manufacturability, ethical, health, safety ,social and political constraints and how these are related to the overall engineering processes. These will be used as an integral part of their capstone projects.	Related	Course integrates all aspects of sustainability by evaluating economics, environmental, ethical, health, safety, social and political constraints on the engineering process.
UGRD	ETEC	4100	Electronic Engineering Technology	Francis College of Engineering	System Engineering and Analysis (Formerly 17.410)	This course describes the entire development of complex systems form needs and requirements analysis through the life cycle design process. Phases of system design form conceptual to detailed design are described. Program management and control techniques, including risk management and configuration management, are discussed Analysis of alternatives and decision making under risk and uncertainty are covered. Mathematical tools for quantitative analysis are described. Costing issues are discussed and the ""ilities"" (i.e., reliability, maintainability, supportability, etc.) are introduced.	Related	Course relates engineering design to sustainability.
UGRD	ETEC	4600	Electronic Engineering Technology	Francis College of Engineering	Power Conversion Design II (Formerly 17.460)	Forward converter topologies are reviewed and core selection equations are developed from magnetic fundamentals, power and winding requirements. Transformer design and winding layups are studied for their effects on eddy currents, proximity effect and AC resistance. Drive requirements and circuits are investigated for both BJTÆs and MOSFETÆs along with snubber circuits.	Related	Course explores energy designs and conversions to make systems as efficient as possible.
UGRD	ENGL	2770	English	College of Fine Arts, Humanities and Social Sciences	American Ethnic Literature (Formerly 42.277)	The course addresses the literature of America's immigrant and cultural groups and how it contributes to defining our national character.	Related	Course integrates the social aspect of sustainability by examining the how literature of immigrant and cultural groups contributes to a national character.
UGRD	ENGL	3780	English	College of Fine Arts, Humanities and Social Sciences	Asian American Literature (Formerly 42.378)	Asian Americans hold an intriguing place in the cultural imagination: as perpetual foreigners, as so-called 'model minorities' that serve to maintain hegemonic power relations, and as living embodiments of America's memory of its involvement in recent wars. As artists, however, Asian Americans have contributed and impressive body of literary work, and we'll examine some of the most enduring and provocative of these texts. We'll explore themes such as trauma and the immigrant experience, issues of exile and dislocation, Asian Americans' embattled place in our country's history, and the intersections of race and ethnicity with gender and sexuality.	Related	Course covers Asian American culture in America through a social context.
UGRD	ENGL	3790	English	College of Fine Arts, Humanities and Social Sciences	Postcolonial Literature (Formerly 42.379)	When the peoples of Africa, India, the Caribbean, Ireland, and Canada finally gained, to a greater and lesser extent, independence from the British during the 20th century, they found that their national, cultural, and individual identities had been radically altered by the experience of colonization. In this course, we will examine how authors have related this postcolonial condition. We will examine a diverse body of texts--poetry which eloquently describe the heroic journey out of colonialism, drama which lays bare the conflicts of assimilation, and novels which fantastically present political struggle--as we determine how postcolonial theory and literature affects and possibly redefines all literature.	Related	Course covers the cultural changes of people after colonization.
UGRD	ENGL	3240	English	College of Fine Arts, Humanities and Social Sciences	Writing About Place (Formerly 42.324)	Writers throughout time have been thoroughly grounded in place. Students in this course will read and write on a variety of topics: travel, cities, suburbs, dwelling places, nature, environmental issues, etc., in a variety of genres: creative non-fiction, essays, journalism, short stories, poetry, journals. This course will be held in a workshop format with strong emphasis on revision.	Related	Course incorporates social and environmental aspects of sustainability.

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UGRD	ENGL	2480	English	College of Fine Arts, Humanities and Social Sciences	Values in American Culture (Formerly 42.248)	Deals with the development and interrelationship of American views on individualism, nature, science, technology, democracy, ethnicity, and the American dream. Readings begin with the Puritans and end with contemporary essayists. Deals with the development and interrelationship of American views on individualism, nature, science, technology, democracy, ethnicity, and the American dream. Readings begin with the Puritans and end with contemporary essayists.	Related	Class integrates environmental, social, and economic aspects of sustainability by studying American views on nature science ethnicity and democracy.
UGRD	ENGL	2820	English	College of Fine Arts, Humanities and Social Sciences	American Literary Traditions (Formerly 42.282)	A survey of American Literary history from early contact between Native American populations and European colonists through contemporary American writing.	Related	Course integrates social aspects of sustainability.
UGRD	ENGL	3120	English	College of Fine Arts, Humanities and Social Sciences	Literature of Colonial America (Formerly 42.312)	This course will explore the literatures (including some selections in translation) written during America's colonial era. The periods of exploration, first encounters, settlement, the rise of Anglo-America, the emergence of a national sensibility, and the years of transition in the new republic will be considered. The course will also treat a small selection of nineteenth century texts that present visions and re-visions of the colonial past.	Related	Course integrates social aspects of sustainability by examining the relationship between literature and the social trends of America's colonial era.
UGRD	ENGL	3350	English	College of Fine Arts, Humanities and Social Sciences	American Women Novelists (Formerly 42.335)	A study of selected novels by American women. Focus on the female voice within the American tradition. Treatment of such issues as domesticity, education, and authorship.	Related	Course integrates social and social justice aspects of sustainability via selected women novelists on issues such as domesticity and education.
UGRD	ENGL	4360	English	College of Fine Arts, Humanities and Social Sciences	Writing About Culture (Formerly 42.436)	In this course, students will write about local culture, using a mix of first-hand observation, archival research, and/or contextual or geographic readings of culture of literature produced in the region. This course is designed to serve as a course in a study abroad program or one that focuses on regional authors such as Jack Kerouac or Henry David Thoreau.	Related	Course integrates literature and culture.
UGRD	ENGL	2490	English	College of Fine Arts, Humanities and Social Sciences	Literature on Technology and Human Values (Formerly 42.249)	A study of the relationship between works of fiction, cultural attitudes toward technology, and social values.	Related	Course integrates the social aspect of sustainability by examining the relationship between literature, cultural attitudes and social values.
UGRD	ENGL	2740	English	College of Fine Arts, Humanities and Social Sciences	The Literature of the Beat Movement (Formerly 42.274)	Explores both the writings and the personal lives of a loose confederation of poets, novelists, and essayist who emerged onto the American literary and cultural scene following World War II and who came to be known as the -Beat Generation.+ The primary focus will be on the life and writings of Lowell native Jack Kerouac (1922-1969) with others of the -beat circle+ included as well, i.e., Allen Ginsberg, William Burroughs, Diana DiPrima, etc.	Related	Course relates to social change following World War II.
UGRD	ENGL	2430	English	College of Fine Arts, Humanities and Social Sciences	Contemporary Women Writers (Formerly 42.243)	Contemporary Women Writers introduces students to American women writers of the last fifty years. We examine the historical,socio-cultural, political, and personal influences on these writers' work by studying trends and events in recent American history and themes reflected in the works. By studying contemporary women's writing in this contextualized fashion, students can appreciate larger trends in our society, the role writing plays in examining such trends, and the value of literature as an exploration of human growth and struggle. Through discussion, group collaboration, critical analysis, and by designing their own graphic organizers, students gain a breadth of knowledge in the following areas: the themes and stylistic concerns of contemporary American women writers; the key historical events that influence contemporary American women's writing; the critical reading of literary texts.	Related	Course integrates the social aspect of sustainability by examining the socio-cultural influence of women writers' work and trends in American history reflected in the works.
UGRD	ENGL	2510	English	College of Fine Arts, Humanities and Social Sciences	War in Literature (Formerly 42.251)	In ""War in Lierature"" we will study conflict and human values in times of war, focusing on the literature of World War I, World War II, Vietnam, and the Gulf War. Content covered includes a selection of representative (and divergent) literary texts written throughout the 20th century in a variety of genres (poetry, essays, memoir, short story, novel, and hybrid forms like the ""graphic novel"").	Related	Course explores human conflicts during times of war relating to the social aspect of sustainability.
UGRD	ENGL	2530	English	College of Fine Arts, Humanities and Social Sciences	The Culture of American Sport (Formerly 42.253)	An examination of the history, literature, sociology, and aesthetics of sport. Attention to corollary issues and values including racism, sexism, and violence.	Related	Course examines a social aspect of sustainability.
UGRD	ENGL	3130	English	College of Fine Arts, Humanities and Social Sciences	Realism and Naturalism American Fiction (Formerly 42.313)	A study of realism and naturalism in fiction from the end of the Civil War to World War I.	Related	Course incorporates several aspects of sustainability by exploring naturalism in literature during a complex period in American history.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	ENGL	3280	English	College of Fine Arts, Humanities and Social Sciences	Writing About Women (Formerly 42.328)	Writing About Women	Related	Course integrates social and social justice aspects of sustainability by exploring writing about women.
UGRD	ENGL	3640	English	College of Fine Arts, Humanities and Social Sciences	African American Drama (Formerly 42.364)	A study of the history and development of African American drama, with emphasis on major aesthetic, political, and social movements in African American culture.	Related	Course integrates social aspects of sustainability via social and political movements in African American culture.
GRAD	ENTR	6100	Entrepreneuship	Manning School of Business	Global Entrepreneurship and Innovation I (Formerly ENTR /64.610)	The Course is offered as a 2-week intensive experiential learning of Global Entrepreneurship and Innovation. It is designed to help students to understand the importance of entrepreneurship and innovation in today's global economy and to cultivate an entrepreneurial mind-set among the students in the UMass Lowell Students will work in inter-disciplinary, multi-cultural environments exploring problem solving techniques, opportunities identification, business concept development and venture planning using standard business model framework and bringing ideas to reality.	Related	Course focuses on the importance of innovation and entrepreneurship in relation to a sustainable global economy.
GRAD	ENTR	6700	Entrepreneuship	Manning School of Business	Global Entrepreneurship (Formerly ENTR /64.670)	This course discusses state of global entrepreneurship and the opportunities for it. It will cover different forms of global entrepreneurship, influences of macro forces and factors for global entrepreneurs consideration. The course will offer a structured approach to thinking and creating entrepreneurship beyond domestic markets and operations. It will present entrepreneurship framework, case studies, group projects and connections with global entrepreneurs to understand real-life global entrepreneurship.	Related	Course focuses on the relationship between global entrepreneurship and a sustainable global economy.
GRAD	ENTR	6110	Entrepreneuship	Manning School of Business	Global Entrepreneurship and Innovation II (Formerly ENTR /64.611)	The Course is offered as a 2-week intensive experiential learning of Global Entrepreneurship and Innovation. It is designed to help students to understand the importance of entrepreneurship and innovation in today's global economy and to cultivate an entrepreneurial mind-set among the students in the UMass Lowell. Students will work inter-disciplinary, multi-cultural environments exploring problem solving techniques, opportunities identification, business concept development & Venture planning using standard business model framework and bringing ideas to reality.	Related	Course focuses on the importance of innovation and entrepreneurship in relation to a sustainable global economy.
UGRD	ENTR	3000	Entrepreneuship	Manning School of Business	Principles of Innovation and Entrepreneurship (Formerly ENTR/64.300)	This course is designed to help non-business students understand the importance of innovation and entrepreneurship in today¿s global economy and cultivate an entrepreneurial mindset among students in the Manning School of Business entrepreneurship concentration. It will cover different forms of entrepreneurship such as small businesses, growth ventures, corporate entrepreneurship and social entrepreneurship. The course will focus on the types of innovation, turning innovation into an ongoing new venture and on the entrepreneurial process. Innovation and entrepreneurship theories and concepts will be discussed with real life examples and cases.	Related	
UGRD	ENTR	4100	Entrepreneuship	Manning School of Business	Global Entrepreneurship and Innovation - I (Formerly ENTR /64.410)	The Course is offered as a 2-week intensive experiential learning of Global Entrepreneurship and Innovation. It is designed to help students to understand the importance of entrepreneurship and innovation in today's global economy and to cultivate an entrepreneurial mind-set among the students in the UMass Lowell. Students will work in inter-disciplinary, multi-cultural environments exploring problem solving techniques, opportunities identification, business concept development & venture planning using standard business model framework and bringing ideas to reality.	Related	Course focuses on the importance of innovation and entrepreneurship in relation to a sustainable global economy. Integrates cultural and economic aspects of sustainability.
UGRD	ENTR	4110	Entrepreneuship	Manning School of Business	Global Entrepreneurship and Innovation - II (Formerly ENTR /64.411)	The Course is offered as a 2-week intensive experiential learning of Global Entrepreneurship and Innovation. It is designed to help students to understand the importance of entrepreneurship and innovation in today's global economy and to cultivate an entrepreneurial mind-set among the students in the UMass Lowell. Students will work in inter-disciplinary, multi-cultural environments exploring problem solving techniques, opportunities identification, business concept development & venture planning using standard business model framework and bringing ideas to reality.	Related	Course focuses on the importance of innovation and entrepreneurship in relation to a sustainable global economy. Integrates cultural and economic aspects of sustainability.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	GNDR	2400	Gender Studies	College of Fine Arts, Humanities and Social Sciences	Introduction to Gender Studies (Formerly GNDR 240)	This course is an interdisciplinary introduction to the field of Gender Studies that examines both commonalities and differences among diverse groups of women. A variety of topics are presented such as past and present stratification in work and family, sexual identities, medial representations of women, and violence against women. Social movements for women's equality and feminist theories and methods are also introduced.	Related	Course integrates social justice aspect of sustainability.
UGRD	GNDR	3010	Gender Studies	College of Fine Arts, Humanities and Social Sciences	Gay and Lesbian Studies (Formerly GNDR 301)	This seminar provides an introduction to the interdisciplinary field of lesbian, gay, bisexual. and transgender (LGBT) studies, incorporating perspectives from the sciences, social sciences and humanities. The general goal of the course is for students to explore the dynamic, interactive forces - biological, psychological, social, cultural, and political - that shape the experience of sexuality. Topics will include: methodological, epistemological and pedagogical issues in the study of sexuality; the biological foundations of gender and sexuality; the social construction of sex and gender; literary, artistic, and mass media representations of LGBT people; development of gender and sexual identities; relationships and families; LGBT communities and political movements; HIV/AIDS; intersecting identities (gender, race, class, disability, etc.), and queer theory.	Related	Course integrates social justice aspect of sustainability.
GRAD	GEOL	5400	Geoscience	Kennedy College of Sciences	Mass Transit Modeling (Formerly 89.540)		Related	Effective mass transportation systems are criticlal to transportation related greenhouse gas reductions and real world application of sustainable practices.
GRAD	GEOL	5580	Geoscience	Kennedy College of Sciences	Advanced Geochemistry (Formerly 89.558)	Application of chemical principles to geological and environmental problems. Topics include abundance and distribution of elements in the earth, Crystal chemistry, stable and radiogenic isotopes, radiogenic dating, isotopic and elemental tracers, water-rock interactions.	Related	Course examines the relationship between geochemistry and the changing geological and environmental factors on Earth.
UGRD	GEOL	3070	Geoscience	Kennedy College of Sciences	Earth Materials I (Formerly 89.307)	An introduction to the basic principles that control the arrangement of atoms in crystalline solids (minerals) and their physical and chemical properties. Topics include crystal chemistry, crystal symmetry, macroscopic mineral identification, and the use of polarizing light microscopy and X-ray diffraction to identify and characterize minerals.	Related	Course focuses on the physical and chemical properties that make up the Earths' materials.
UGRD	GEOL	3090L	Geoscience	Kennedy College of Sciences	Earth Materials I Laboratory (Formerly 89.309)	Laboratory to accompany Earth Materials I lecture. Topics include crystal structures, crystal symmetry, hand-speciman identification of minerals, X-ray diffraction, and polarizing light microscopy.	Related	Lab provides experience in mineral identification and crystal structures.
UGRD	GEOL	3140	Geoscience	Kennedy College of Sciences	Hydrogeology (Formerly 89.314)	This course investigates the science of water in a geologic setting with special emphasis on the distribution, movement, and chemistry of the water. The course will include the following topics: techniques for measuring elements in the hydrologic equation, accuracy of hydrologic measurement, statistical studies of floods, and study of groundwater for both steady-state and transient conditions.	Related	Course explores the dynamics of hydrology through a sustainable lens.
UGRD	GEOL	1030L	Geoscience	Kennedy College of Sciences	General Geology Laboratory (Formerly 89.103)	Topics covered include rock and mineral identification; interpretation of topographic and geologic maps; earthquakes and rock deformation; ground water, streams, wind, and glaciers and the sculpting of the Earth's surface; and natural hazards and their impacts to humans.	Related	Course integrates geological features of Earth's surface including impacts of natural hazards on humans.
UGRD	GEOL	3190	Geoscience	Kennedy College of Sciences	Earth Surface Processes (Formerly 89.319)	A study of the physical and chemical processes that create landforms on the Earth's surface. Emphasis is placed on physical and chemical weathering, fluvial erosion, glacial processes, soil formation, mass movements, slope stability and tectonic geomorphology.	Related	Course examines forces that continuously shape the Earth's surface.
UGRD	GEOL	3210L	Geoscience	Kennedy College of Sciences	Earth Surface Processes Laboratory (Formerly 89.321)	Hands-on investigation of landforms and surficial processes through interpretation and synthesis of maps, aerial photography and field data.	Related	Course examines forces that continuously shape the Earth's surface.
UGRD	GEOL	1010	Geoscience	Kennedy College of Sciences	General Geology (Formerly 89.101)	Presents a study of the earth with emphasis on earth materials, earth structure (crustal and internal), earth history, and the development of life. Designed for the general student.	Related	Course presents a study of the Earth explores the use of Earth's materials for eco-environmental benefits.
UGRD	GEOL	3250	Geoscience	Kennedy College of Sciences	Geology for Engineers (Formerly 89.325)	This course will introduce basic geological principles with an emphasis on engineering applications. Topics covered include minerals and rocks and their properties, surface processes, earthquakes and rock deformation, dynamic processes that affect the earth's surface, geological hazards and their mitigation, earth resources.	Related	Course integrates engineering applications of geological principles with focus on earth's resources.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	GEOL	3080	Geoscience	Kennedy College of Sciences	Earth Materials II (Formerly 89.308)	Origin and properties of igneous, metamorphic, and sedimentary rocks. The rock cycle is used as a unifying concept. The role of rock properties in environmental, economic, and engineering applications is considered.	Related	Course examines the role of rock properties in environmental, economic and engineering applications.
UGRD	GEOL	3160	Geoscience	Kennedy College of Sciences	Geomorphology (Formerly 89.316)	A study of the physical and chemical processes at work on the earth's surface which result in the formation and development of surface features. Emphasis is placed on the mechanics of erosion (water, wind, ice, and waves) and the morphology and spatial distribution of the resultant landforms.	Related	Course examines the geographical changes the Earth goes though as a result of environmental activity.
UGRD	GEOL	3180L	Geoscience	Kennedy College of Sciences	Geomorphology Laboratory (Formerly 89.318)	Investigates landforms and surficialprocesses through an interpretation of maps and field work. Environmental applications of surficial processes are stressed.	Related	Course examines environmental applications of physical and chemical processes that affect landforms on Earth's surface.
UGRD	GEOL	3220	Geoscience	Kennedy College of Sciences	Structural Geology (Formerly 89.322)	An analysis of crustal deformation through detailed study of geologic structures with emphasis upon the response of geologic materials to stress and strain. Field techniques, tectonic principles, and geometrical analysis are employed.	Related	Course discusses geologic structures in relation to the Earth's environment.
UGRD	GEOL	3240L	Geoscience	Kennedy College of Sciences	Structural Geology Laboratory (Formerly 89.324)	A survey of the graphical techniques used to convert field measurement into the information needed in the construction of geologic maps, cross-sections, and crustal stress-strain histories.	Related	Lab discusses geologic structures in relation to the Earth's environment.
UGRD	GEOL	3310	Geoscience	Kennedy College of Sciences	Earth History (Formerly 89.331)	An introduction to the history of the Earth and its life over the last 4.6 billion years. Applications include geologic principles, earth material, depositional environments, stratigraphy, the geological timescale, plate tectonics, and evolutionary theory.	Related	Course examines the structural and environmental changes the Earth has gone through since its formation.
UGRD	GEOL	3330L	Geoscience	Kennedy College of Sciences	Earth History Laboratory (Formerly 89.333)	This laboratory compliments Earth History lecture material. Exercises include stratigraphic methods, geologic maps and fossil identification.	Related	Course relates to an understanding of the Earth's history by examining the physical and chemical properties that makeup the Earth.
UGRD	GEOL	3520	Geoscience	Kennedy College of Sciences	Sedimentation And Stratigraphy (Formerly 89.352)	Principles and processes of sedimentation: erosion, mechanics of transport, diagenesis and lithification, models for sedimentary environments. Development of the stratigraphic record, relative and absolute time, and seismic stratigraphy.	Related	Course examines the process of sedimentation and the physical and environmental changes it has on the Earth.
UGRD	GEOL	3540L	Geoscience	Kennedy College of Sciences	Sedimentation And Stratigraphy Laboratory (Formerly 89.354)	Determination of mass properties of sediments with emphasis on mechanical and statistical analysis, identification and description of sedimentary rocks, facies models and stratigraphic cross-sections.	Related	Lab examines the process of sedimentation and the physical and environmental changes it has on the Earth.
UGRD	GEOL	4560	Geoscience	Kennedy College of Sciences	Applied Geophysics (Formerly 89.456)	Application of geophysics to problems in geology and environmental science. Principles and techniques of gravity, magnetic, electrical, and seismic methods. Field projects and surveys.	Related	Geophysics are applied to environmental problems.
UGRD	GEOL	3100L	Geoscience	Kennedy College of Sciences	Earth Materials II Lab (Formerly 89.310)	Macroscopic and microscopic characterization and classification of rocks. Investigation of physical processes and spatial representation of rock and sediment distribution.	Related	Course focuses on the examination of rock properties and its roll in shaping the environment.
UGRD	GEOL	3150	Geoscience	Kennedy College of Sciences	Environmental Geochemistry (Formerly 89.315)	Application of geochemical principles to environmental problems including air pollution and atmospheric processes, climate change, water chemistry and water-rock interactions, and the transport and dispersal of organic and inorganic pollutants.	Related	Course integrates geochemical principles to environmental issues and climate change.
UGRD	GEOL	3410	Geoscience	Kennedy College of Sciences	Environmental and Engineering Geology (Formerly 89.341/541)	Fundamentals of geology applied to environmental and engineering problems. Topics include minerals and rocks, soil properties, rock mechanics, active tectonics and earthquake hazards, slope stability and landslides, groundwater, rivers and flood hazards, coastal processes, and site assessment. Student project.	Related	Course applies geology to the study of environmental and engineering problems.
GRAD	GLST	7010	Global Studies	College of Fine Arts, Humanities and Social Sciences	Global Studies I (Formerly GLS.701)	The focus of this course is the intersection of theory and practice in Global Studies. Students will be acquainted with the three fields of study that structure the Ph.D. Global Studies curriculum: Comparative Cultures, Security and Human Rights, and Socio-Economic Development and the interdependence of these fields.	Related	Course integrates social and economic aspects of sustainability on a global scale.
GRAD	GLST	7020	Global Studies	College of Fine Arts, Humanities and Social Sciences	Global Studies II (Formerly GLS.702)	This course elaborates on the topics introduced in GLS 701 Global Studies I. It familiarizes students with specific knowledge competencies in the three fields of study that structure the Ph.D. Global Studies curriculum: Comparative Cultures, Security and Human Rights, and Socio-Economic Development and the interdependence of these fields. Emphasis includes geography, history, economics, and cultural studies.	Related	Course focuses on the social, economic, and environmental aspects of sustainability on a global scale.

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GRAD	GLST	7110	Global Studies	College of Fine Arts, Humanities and Social Sciences	The World of Things: Consumer Culture in Historical Perspective. (Formerly GLS.711)	This course examines the emergence and historical impact of consumer cultures in the modern world, for the mid nineteenth century through the present. Focusing mainly on the cases of France, the United States and Japan, it will trace the broad shift from elite luxury consumption to popular, and eventually global consumer culture over this period.	Related	Course relates modern consumer culture to economic and environmental aspects of sustainability.
GRAD	GLST	7150	Global Studies	College of Fine Arts, Humanities and Social Sciences	International Migration in the Global World (Formerly GLS.715)	This course offers a holistic view of the migration process from multiple disciplinary perspectives with multiple levels of analysis and aspects of the world. The course further reflects the need to examine migration as a general social process as well as a personal/individual experience that can be both liberating and limiting.	Related	Course focuses on the migration as a social process from multiple perspectives incorporating the social aspect of sustainability.
GRAD	GLST	7170	Global Studies	College of Fine Arts, Humanities and Social Sciences	Developing Economies (Formerly GLS.717)	The emphasis of this course is an examination of globalization and whether it can be made a human-centered process, to historically examine the interrelatedness of the world economy to determine how policies shaped by industrialized countries impact developing countries, and to define key terms including poverty, sustainable development, market, informal economy, and civil society.	Related	Course focuses on globalization and developing economies with focus on sustainable development, the economy and civil society.
GRAD	GLST	7120	GLS	Global Studies	Media and Global Culture (Formerly GLS.712)	in this course students will examine the development and increasing interrelatedness of the media industries from the early twentieth century to the present and the range of theoretical and critical approaches taken toward media industries. The emerging field of ""Media industry studies"" that emphasizes the importance of integrating analysis of media structures with consideration of cultural, global and textual matters will be explored.	Related	Course relates to the impact global media can have on social movements.
GRAD	GLST	7140	GLS	Global Studies	Globalization, Fenimism, and Liberalism (Formerly GLS.714)	This course provides students with opportunities to gain an understanding of the issues necessary to consider whether, and to what extent, liberalism and feminism are compatible in a global context. The importance of critical thinking and communication are emphasized.	Related	Course relates to the global and social aspects of sustainability, specifically equal opportunity.
GRAD	HIST	5160	History	College of Fine Arts, Humanities and Social Sciences	Consumer Cultures in Historical Perspective (Formerly 43.516)	This course examines the emergence and historical impact of consumer cultures in the modern world, from the mid nineteenth century through the present. Moving between Europe, North America, Asia and Africa, it will trace the broad shift from elite luxury consumption to popular, and eventually global consumer culture over this period. Individual classes will focus on issues such as the emergence of new retailing practices and spaces of consumption; changing attitudes towards material life; the construction of modern social identities of class, gender, generation and race through consumption; and political struggles over consumption. Our approach will be an interdisciplinary one, involving multiple tools of analysis and a great variety of both written and visual historical materials.	Related	Course examines the global, societal, and economic impact of consumerism.
GRAD	HIST	5350	History	College of Fine Arts, Humanities and Social Sciences	Immigration History (Formerly 43.535)	The course focuses on the experiences of women, men, and children who came to the U.S. from the colonial era through the 21st century. Their emigrations will be examined in a global context. Irish migration, the mass European migrations during the did late 19th / early 20th centuries, and post-Second World War immigration particularly from Asian and African countries are discussed. The Lawrence, Lowell, and Boston immigration stories are extensively considered. Students will acquire an understanding of U.S. Immigration History - Both the experiences of immigrants and reactions to that immigration over time, including the frequent passage of federal legislation to block or impede immigration. Students will utilize area immigration archives to produce original research on the topic.	Related	Course focuses on immigration to the U.S since the colonial era incorporating social, cultural and political aspects of sustainability.
UGRD	HIST	1080	History	College of Fine Arts, Humanities and Social Sciences	World Civilization II (Formerly 43.108)	This course will introduce you to the study of world history, its relevance for living in the present, and the challenge to think critically about the emergence and subsequent development of the modern world since 1500. Participants in this course will examine experiences that transcend societal and cultural regions, focus on processes of cross-cultural interaction, and investigate patterns that influenced historical development and continue to impact societies on a global scale.	Related	Course offers an in depth understanding of factors that shape modern civilizations and examines experiences that impact societies on global scale.

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UGRD	HIST	1120	History	College of Fine Arts, Humanities and Social Sciences	United States History since 1877	This course surveys the history of the United States from the end of Reconstruction to the present. It covers significant developments in the politics, economy, culture, and other aspects of American life during that period.	Related	Course incorporates political, economic and cultural aspects of sustainability in American life from 1877 to the present.
UGRD	HIST	1050	History	College of Fine Arts, Humanities and Social Sciences	Western Civilization I (Formerly 43.105)	This course surveys some important issues and tendencies in the history of Western Civilizatio, specifically from Antiquity (ca. 3000 BCE) to early modern Europe (ca. 1650). It examines economic, social, cultural, and political dimensions of the human experience, including social justice and the sustainability of kingdoms, empires, and republics over the long term.	Related	Course traces the origins and evolution of civilizations relating to the social dynamics of sustainability.
UGRD	HIST	3290	History	College of Fine Arts, Humanities and Social Sciences	Childhood in Premodern Europe (Formerly 43.329)	This course examines the concept of childhood in medieval and Renaissance Europe (ca. 1100-1600), with particular attention to England and Italy. There are no specific prerequisites, although some knowledge of European history (i.e., Medieval Institutions, Western Civilization, Renaissance-Reformation) will be useful. Among the topics we will consider are the following: the different stages of childhood; children's education and apprenticeship; dress, diet, and demeanor of children; orphans; royal children; Protestant and Catholic views of children; adolescent sexuality; depiction of children in art; child labor; literature for children.	Related	Course integrates social justice aspect of sustainability with including child labor.
UGRD	HIST	1110	History	College of Fine Arts, Humanities and Social Sciences	United States History to1877 (Formerly 43.111)	This course surveys United States history from the early settlement of North America through the Civil War and Reconstruction. It considers the role of the political and economic leadership in the building of the nation as well as actions of ordinary people whose energies and aspirations constitute the fabric of United States society.	Related	Course examines early United States and the political and economic factors that contributed to the growing nation.
UGRD	HIST	2040	History	College of Fine Arts, Humanities and Social Sciences	China & the Modern World (Formerly 43.204)	This course introduces China's interactions with the world since the 1840s. With theOpium War as the starting point, students are ushered into a traditional China whosepolitical system, cultural values, and an economic structure stood in sharp contrast to those of the outside world. The main focus of the course is to explore the process inwhich China fought for its survival as a sovereign nation and searched for its road tomodernization.	Related	Course examines China as a global power and its influence on global economies since the mid 1800s.
UGRD	HIST	3220	History	College of Fine Arts, Humanities and Social Sciences	Chinese Foreign Policy (Formerly 43.322)	Chinese foreign policy since 1949 with a strong emphasis on tracing the links between historical, ideological, and cultural influences, on the one hand, and pragmatic and nationalistic considerations on the other. While tracing these links, the course explores the intricate process of policymaking in the People's Republic of China.	Related	Course integrates political and cultural aspects of sustainability.
UGRD	HIST	1070	History	College of Fine Arts, Humanities and Social Sciences	World Civilization I (Formerly 43.107)	This class examines societies and cultures from ancient until early modern times with the underlying assumption that world history is an important conceptual tool for understanding our interdependent world. Course topics analyze the nature of the earliest human communities, the development of the first civilizations and the subsequent emergence of cultures in selected areas of Eurasia, Africa, and the Americas. This course also offers a consideration of issues related to the connections and relationships that shaped civilizations as a result of migration, war, commerce, and the various cultural expressions of self, society, and the cosmos before 1500.	Related	Course explores societies and cultures from ancient to early modern times including the various cultural expressions of self and society.
UGRD	HIST	2310	History	College of Fine Arts, Humanities and Social Sciences	Renaissance and Reformation (Formerly 43.231)	The history of Europe in the time of transition between the late Middle Ages and the Early Modern Period. Two principle topics are the intensification of cultural change which began in Italy around 1300 and spread slowly northward and the disruption of the unity of the Western Christian Church.	Related	Course integrates cultural aspect of sustainability with focus on cultural change.
UGRD	HIST	3560	History	College of Fine Arts, Humanities and Social Sciences	Civil War and Reconstruction (Formerly 43.356)	This course surveys the increasing political, social, and economic tensions between the North and the South during the first half of the nineteenth century; the explosion of those tensions into secession and conflict; the four years of war; and the postwar struggle to reconstruct the South and forge a new union.	Related	Course integrates social, political and economic aspects of sustainability.

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UGRD	HIST	2120	History	College of Fine Arts, Humanities and Social Sciences	Modern Latin America (Formerly 43.212)	Modern Latin America, a 200-level course, surveys Latin America from independence in the early nineteenth century to the present using primary sources, a textbook, and scholarly works. It begins with an understanding of the political, social, and economic context from which ideas of independence emerged and consideres the wars for independence. We will spend a significant part of the course studying nation-building: how did the leaders of new nations define their nations and the values that would guide them? Who was included and who was excluded in the process of nation-building? The next part of the course examines the demands of groups originally excluded: the indigenous population, women, and the poor. The portion of the course covering the twentieth century emphasizes Latin America's international connections, focusing on influence from the United States and the effectds of world wars on the region. Mass politics also emerge, and are expressed in the Mexican Revolution and in Peronism. We also wiill consider the Cuban Revolution and its wider effects in the region. We will conclude our survey of the region by considering how historical trends continue to affect politics today. For example, the Bolivian political scene continues to be affected by the events and outcome of the War of the Pacific (1879-1883) and by a strong indigenist movement.	Related	Course integrates the political, social and economic aspects of sustainability.
UGRD	HIST	3490	History	College of Fine Arts, Humanities and Social Sciences	The Cuban Revolution (Formerly 43.349)	The Cuban Revolution has been surrounded by controversy since it took power in 1959. Through readings, films, and discussions, we will examine not only the events that have occurred in Cuba over the last four decades but also the ways that they have been presened to audiences in Cuba, the United States, and elsewhere. We will carefully consider the role of perspective in academic writing and the media and how it has shaped understandings of the Castro era.	Related	Course integrates social and political aspects of sustainability.
UGRD	HIST	3920	History	College of Fine Arts, Humanities and Social Sciences	United States Immigration History (Formerly 43.392)	The course focuses on the experiences of women, men, and children who came to the U.S. from the colonial era through the 21st century. Their emigrations will be examined in a global context. Irish migration, the mass European migrations during the mid and late 19th /early 20th centuries, and post-Second World War immigration particularly from Asian and African countries are discussed. The Lawrence, Lowell, and Boston immigration stories are also considered.	Related	Course focuses on the experiences of men, women and children immigrating to the U.S. in a global context incorporating cultural, social and political aspects of sustainability.
UGRD	HIST	3450	History	College of Fine Arts, Humanities and Social Sciences	Slavery and Abolition (Formerly 43.345)	This course takes a comparative approach to the study of plantation slavery in the Americas with special attention to developments in Virginia and Cuba. It surveys the structure of slavery in the nineteenth century United States South; slavery's legacy in the United States; and its twenty-first century reincarnation in human trafficking and forced labor around the world.	Related	Course relates the history of slavery to current social tensions in our society today.
UGRD	HIST	2400	History	College of Fine Arts, Humanities and Social Sciences	World War I (Formerly 43.240)	The course will cover the wide range of causes of this major conflict, the difficulties and changing dynamics of waging this massive war and the effects of all this on both the internal political and social conditions and external consequences for the combatants with the peace settlement.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	3210	History	College of Fine Arts, Humanities and Social Sciences	The Holocaust (Formerly 43.321)	In a world in which genocide is real, the murder of six-to-eight million Jews between 1939 and 1945 remains a critical topic of inquiry. When were factories of death first conceived? What perverse rationale motivated the collaborators who built and operated the gas chambers and crematoria? This course will answer questions of this kind by examining the most respected scholars who have written on and primary sources that speak directly to the Holocaust	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	3730	History	College of Fine Arts, Humanities and Social Sciences	Nazi Germany (Formerly 43.373)	This course looks at the period 1933-1945 (the period of the ""Third Reich"") in Germany from the perspectives of economics, politics, society, and the arts. In the course, we will read preeminent historians who have written on each of these themes in order to gain a firm understanding of the historical debates that surround the period. Specific subjects include the Nazi consolidation of power, the increasingly brutal nature of anti-Semitic policies, the power struggles among chief Nazi officials, the ideologies and personae of figures like Hitler, Rosenberg, and Goebbels, the nature of ""Nazi art"" and cultural policies, and the path to war.	Related	Course integrates economic, political and social aspects of sustainability.

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UGRD	HIST	3740	History	College of Fine Arts, Humanities and Social Sciences	Stalin's Russia (Formerly 43.374)	Spanning the period from the ""October Revolution"" of 1917 to Stalin's death in 1953, this course considers ""Stalinist Russia"" from the perspectives of economics, society, the arts, politics and war. In the course, we will read the preeminent historians who have written on these topics.	Related	Course integrates economic, political and social aspects of sustainability.
UGRD	HIST	2260	History	College of Fine Arts, Humanities and Social Sciences	Roman History and Civilization (Formerly 43.226)	This course examines one thousand years of Roman history (ca. 500 BC-500AD) with equal emphasis upon social, political, military, and cultural aspects of the Republic and Empire.	Related	Course integrates economic and cultural aspects of sustainability.
UGRD	HIST	3880	History	College of Fine Arts, Humanities and Social Sciences	Ancient Mediterranean: Cultures in Contact (Formerly 43.388)	The ancient Mediterranean was home to a diverse array of cultures in close contact with each other through trade, warfare, and colonization. This course will study a variety of Greco-Roman responses to other cultures through a series of case studies of contact between Greeks, Romans, and other cultures of the ancient world. In particular, we will examine questions of the applicability of modern concepts such as race and ethnicity, and explore the ways in which these shifting representations of other cultures are reflective of the ways in which Greeks and Romans perceived themselves. We will also reflect on the ways in which these ancient Greco-Roman conceptions of culture relate to our own modern understandings of cultural difference.	Related	Course integrates social and political aspects of sustainability.
UGRD	HIST	3500	History	College of Fine Arts, Humanities and Social Sciences	Colonial America: History and Culture (Formerly 43.350)	The early modern period brought enormous change to the Americas as Native American, European and African peoples encountered each other, often clashing, sometimes coexisting. This class opens by examining their responses to each other and to their surroundings in the sixteenth and seventeenth centuries. The class will then transition toward the cultural, material, social and economic revolutions which helped pave the way for the American Revolution at the end of the eighteenth century.	Related	Course examines the social and economic revolutions that took place in colonial America, leading to independence.
UGRD	HIST	2700	History	College of Fine Arts, Humanities and Social Sciences	Women in American History (Formerly 43.270)	This course surveys the history of women in the British North American colonies and United States with a special focus on social and economic change. It examines women as a distinct group but also attends to divisions among them, particularly those based on class, ethnicity/race, and regional diversity. Course themes include concepts of womanhood, the development and transgression of gender roles, unpaid work and wage labor, social reform and women's rights activism, as well as changing ideas and practices with respect to the female body.	Related	Course integrates social and economic aspects of sustainability with a focus on women in American history.
UGRD	HIST	2740	History	College of Fine Arts, Humanities and Social Sciences	Native American History (Formerly 43.274)	A comprehensive study of the Native Americans through historical and first-hand accounts of their lives. Designed to enlighten students and to represent fairly the Native Americans, dispelling some of the existing myths about them.	Related	Course integrates social and cultural aspects of sustainability.
UGRD	HIST	2420	History	College of Fine Arts, Humanities and Social Sciences	World War II (Formerly 43.242)	The Second World War transformed states and people from East Asia to the United States to Europe. We examine diplomatic and military aspects of the war and how it affected the lives of people in the countries involved. Topics include the prelude to the war, military campaigns in Europe and the Pacific, collaboration and resistance, the home front, the Holocaust, science and the atom bomb, and the consequences of the war.	Related	Course integrates political and social aspects of sustainability including science and the atomic bomb and consequences of war.
UGRD	HIST	3270	History	College of Fine Arts, Humanities and Social Sciences	England: The Middle Ages (Formerly 43.327)	The history of the English people and nation from the Roman conquest to the end of the fourteenth century with special emphasis on the development of political and social institutions.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	2490	History	College of Fine Arts, Humanities and Social Sciences	The Vietnam War (Formerly 43.249)	Covers the U.S. was in Vietnam from its origins in the French colonial era to its impact on contemporary culture and foreign policy.	Related	Course integrates political and cultural aspects of sustainability.
UGRD	HIST	3570	History	College of Fine Arts, Humanities and Social Sciences	American Civil War in Memory (Formerly 43.357)	Students analyze how Americans have remembered the American Civil War in the years after the war ended in 1865. By looking at novels, memoir films, National Park Service Battlefields, and monuments, students discover how remembrances are influenced by views of race, gender, patriotism, regionalism, and economic forces.	Related	Course integrates social, political and economic aspects of sustainability.
UGRD	HIST	3040	History	College of Fine Arts, Humanities and Social Sciences	European Economic & Social History (Formerly 43.304)	Europe has been transformed in the last 250 years from an agricultural society to a post-industrial one. We study the processes by which this happened, from the Industrial Revolution of the 18th and early 19th century to the wars and depressions of the early 20th century and the collapse of the communist system and European unification in the late 20th century. Students learn basic concepts and methods of history and economics.	Related	Class focuses on the transformation of Europe incorporating environmental, social, and economic aspects of sustainability.

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UGRD	HIST	3760	History	College of Fine Arts, Humanities and Social Sciences	20th Century Irish History in Film (Formerly 43.376)	This course is on the representation of Irish history in narrative feature and documentary films made in or about Ireland. Starting with the revolutionary era, it covers the key events, issues, and debates that defined Irish politics, culture and society in the last hundred years. The course is divided into five thematic sections and proceeds chronologically through the 20th century, starting with the War of Independence against the Britain and the Civil War that followed; the American romanticism of Ireland in film;social issues that plagued the Irish Free State and Republic;the period of violence in the North known as The Troubles;and the issued raised by multi-culturalism during the Celtic Tiger era.	Related	Course integrates political, cultural and social aspects of sustainability.
UGRD	HIST	3650	History	College of Fine Arts, Humanities and Social Sciences	United States History since 1960 (Formerly 43.365)	Discusses Cold War politics and civil rights upheavals during the 1960's and 1970's, the decline of American economic and political power, and the resurgence of conservative politics in the 1980's.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	2950	History	College of Fine Arts, Humanities and Social Sciences	Japan Since 1600 (Formerly 43.295)	A study of the traditional Japanese institutions and the transformation of Japan into a modern state after 1868: the Tokugawa Shogunate, Meiji Restoration, Russo-Japanese War, world power status, militarism, World War II, and present day Japan.	Related	Course integrates social and cultural aspects of sustainability.
UGRD	HIST	2960	History	College of Fine Arts, Humanities and Social Sciences	United States Diplomatic History (Formerly 43.296)	Although the course takes the entire United States diplomatic history as its field of historical study, its focus is on the American foreign policy in the twentieth century. The course first explores domestic and international factors that made the United States a world power by 1898. It will then consider the goals, the practices, and the results of the twentieth century American foreign policy. The course challenges students to view American diplomacy in a global context.	Related	Course integrates social, economic, and political aspects of sustainability.
UGRD	HIST	3690	History	College of Fine Arts, Humanities and Social Sciences	Russia 1796 to the Present (Formerly 43.369)	This course covers the history of Russia in its various incarnations-Imperial Russia from the end of Catherine the Great's reign the Soviet Union, and today's Russian Federation. We use both historical works and literature to get a better understanding of the Imperial state, the nature and the social bases of autocracy, the ideologies and actions of the movements that supported the Empire and those that opposed it. We cover the cataclysms of World War I, the Revolutions, Civil War, and the Soviet period (preparing the student for the course on ""Stalin's Russia"", 43.374). We examine the causes and events involved int he decline and collapse of the Soviet Union, and the rise and emerging patterns of behavior of the Russian Federation.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	3840	History	College of Fine Arts, Humanities and Social Sciences	Radicalism in American History (Formerly 43.384)	A biographical approach to the influence of radicalism on American history with emphasis on significant and representative personalities and heir contributions.	Related	Course integrates social and political aspects of sustainability.
UGRD	HIST	2810	History	College of Fine Arts, Humanities and Social Sciences	Sub--Saharan Africa (Formerly 43.281)	This course provides a basic introduction to the history of the African continent. It will expose students to the processes and patterns that have shaped modern African history. The course examines the historical roots of the many challenges that the continent faces today. But, at the same time, it will also provide students with the knowledge to shatter the myths and stereotypes about Africa.	Related	Course integrates social and cultural aspects of sustainability.
UGRD	HIST	3910	History	College of Fine Arts, Humanities and Social Sciences	America and the World (Formerly 43.391)	In an age of increasing globalization, historians realize the need for putting the American national narrative in a wider historical context. This course will help students locate the study of the United States in a global, comparative and transnational perspective. This course will be used as one of the courses needed by History majors in the global, comparative and under-represented areas of the major.	Related	Class integrates an understanding and narrative of the United States through a global lens.
UGRD	HIST	2750	History	College of Fine Arts, Humanities and Social Sciences	African-American History (Formerly 43.275)	This course surveys African American history in the United States from colonization to the present. It begins with a study of life in West Africa and traces the forced migration of Africans to the Americas. It explores West African transmissions, the freedom struggle, the great migrations from the South, the Harlem Renaissance, the modern Civil Rights movement, and the continuing impact of African Americans on life in the 21st century.	Related	Course integrates social and cultural aspects of sustainability.

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UGRD	HIST	2370	History	College of Fine Arts, Humanities and Social Sciences	Europe in the Twentieth Century (Formerly 43.237)	This course will survey the continent¿s history over its `age of extremes¿ in the twentieth century, moving broadly from the apogee of European global power at the turn of the century to its decline in the trauma of two world wars and decolonization, through the Cold War and post-1945 recovery and the challenges and possibilities that have arisen for Europe in the aftermath of 1989 and the fall of the Berlin Wall.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	1010	History	College of Fine Arts, Humanities and Social Sciences	Classical Civilization (Formerly 43.101)	This course provides an introduction to the Ancient Near East, Greece and Rome. The class first examines the formation of urban centers and the evolution of civilization as the late Bronze Age world transforms into the Iron Age with the creation of the vast empires such as Assyria and Achaemenid Persia. The course then focuses on the development of Greek city-states and the ideological differences between Athens and Sparta with a brief exploration of Classical Greed culture. Finally the class looks at the conquests of Alexander and his successors in the East, and the development of Rome as it shaped and was shaped by the cultures it conquered. The course requires short analytical papers, exams, and historical analysis of primary sources.	Related	Course traces the origins and evolution of civilizations relating to the social dynamics of sustainability.
UGRD	HIST	1060	History	College of Fine Arts, Humanities and Social Sciences	The Modern World (Formerly 43.106)	In a period of intensifying globalization a basic understanding of our world is increasingly important. The main purpose of this course is to expose students to the global processes that have shaped our modern world since roughly the year 1500. Taking on a global and comparative perspective, this course will help students to develop a topical, chronological, and geographical understanding of global history and cultures.	Related	Course examines global history and cultures incorporating social and cultural aspects of sustainability.
UGRD	HIST	2070	History	College of Fine Arts, Humanities and Social Sciences	Women in China (Formerly 43.207)	From Confucian texts to current conditions, the course examines the evolution of Chinese women's status throughout the centuries. The course will ask questions such as whether Confucianism dictated oppression against women, what factors influenced the changes of status for women, how Western feminism is connected with Chinese women, what roles women played in transforming China, and how ordinary women lived and are still living in China.	Related	Course integrates social and cultural aspects of sustainability.
UGRD	HIST	2090	History	College of Fine Arts, Humanities and Social Sciences	Colonial Latin America (Formerly 43.209)	This class examines the history of Latin America from 1492 until the early nineteenth century. After considering the rise of the Aztec and	Related	Course integrates political, social and economic aspects of sustainability.
UGRD	HIST	2110	History	College of Fine Arts, Humanities and Social Sciences	Historical Dimensions of Globalization (Formerly 43.211)	This course explores the impact of globalization on the development of world societies in the late 20th-early 21st century. Using historical analysis of contemporary realities, it develops an appropriate frame of reference to address questions about the nature and cause of globalization.	Related	Course explores the impact of globalization on modern nations.
UGRD	HIST	2130	History	College of Fine Arts, Humanities and Social Sciences	History of the Ancient Near East (Formerly 43.213)	This broad survey investigates the development of the so-called ""Cradles of civilization, "" Ancient Mesopotamia, Egypt, Anatolia, the Levant and Persia. At times the class will dip deeply into these cultures, using primary texts as well as archaeological and artistic evidence to better understand the political, religious, economic, military, social and artistic evolution of these closely associated cultures. We will focus on themes such as the development of kingship as a secular and sacred ruler, the ideology of Empire, the environment, and the fragility of the inter-connected network of resources that developed. The ultimate goal is to understand the inter-cultural milieu of the Ancient Near East and demonstrate how much Western civilization owes to these historical developments.	Related	Course incorporates cultural, social, economic and environmental aspects of sustainability.
UGRD	HIST	2230	History	College of Fine Arts, Humanities and Social Sciences	England to 1660 (Formerly 43.223)	A survey of English History to 1660 with emphasis on the Institutional, Economic and cultural developments. In addition to providing general knowledge of the topic, the course is designed to enhance the learning experience of both History and English majors.	Related	Course integrates economic and cultural aspects of sustainability.
UGRD	HIST	2240	History	College of Fine Arts, Humanities and Social Sciences	England Since 1660 (Formerly 43.224)	A survey of English History since 1660 with emphasis on the Instutional, Economic and cultural developments. In addition to providing general knowledge of the topic, the course is designed to enhance the learning experience of both History and English majors.	Related	Course integrates economic and cultural aspects of sustainability.
UGRD	HIST	2280	History	College of Fine Arts, Humanities and Social Sciences	Women in European History (Formerly 43.228)	This course examines the history of women in late medieval, early modern,	Related	Course integrates social aspects of sustainability.

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UGRD	HIST	2390	History	College of Fine Arts, Humanities and Social Sciences	The Nonwestern World Since 1945 (Formerly 43.239)	The recent history of Africa, the Middle East, Asia and Latin America and the comparative global processes and trends that have influenced the world since 1945.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	2410	History	College of Fine Arts, Humanities and Social Sciences	Colonial Survival: Case Studies in Early American Legal and Political History (Formerly 43.241)	This class contrasts the dominant monoculture colonies of Massachusetts Bay and Virginia with the lesser known multicultural colonies of Maine, Plymouth, New Amsterdam, Maryland and Rhode Island. While some of the multicultural colonies foundered, others flourished by utilizing a wide range of political and legal methods which allowed for their survival alongside much larger rival colonies. The class finishes by examining similar political and legal methods employed by Native American tribes for their own survival, in particular the Cherokee, whose carefully negotiated accommodations to Anglo-American culture allowed them to live side by side with the growing United States until the 1830's. Close analysis of both primary and secondary source material will provide students with an intensive look at rarely examined issues in early American history.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	2620	History	College of Fine Arts, Humanities and Social Sciences	The Twenties and the Thirties (Formerly 43.262)	An examination of the emergence of the corporate and governmental institutions of modern America set in two turbulent decades of cultural and political ferment that involved both booming prosperity and the economic collapse of the Great Depression.	Related	Course integrates the political and economic aspects of sustainability and examines the prosperity and collapse of the Great Depression.
UGRD	HIST	3020	History	College of Fine Arts, Humanities and Social Sciences	Byzantine History & Civilization (Formerly 43.302)	A study of the important political, social, and cultural changes in the East Roman Empire from the founding of Constantinople to the fall of the Empire in 1453 with emphasis on the role of Byzantium as the custodian of the classical past.	Related	Course integrates political, social and cultural aspects of sustainability.
UGRD	HIST	3140	History	College of Fine Arts, Humanities and Social Sciences	American Social History II (Formerly 43.314)	This course explores various aspects of common peoples' lives in the United States since 1880. Primary areas of investigation include work and leisure, family and community, as well as culture and values.	Related	Course integrates social, cultural and economic aspects of sustainability.
UGRD	HIST	3200	History	College of Fine Arts, Humanities and Social Sciences	American East Asian Relations (Formerly 43.320)	The course examines relations between the United States on one hand and Japan, Korea, China, Vietnam, and the Philippines on the other in the 19th and 20th centuries. Besides political, trade, and cultural relations, there is also emphasis on American laws and practices regarding immigrants from these East Asian countries. The aim of the course is for students to gain a basic knowledge of American relations with East Asia and to develop analytical skills for sophisticated inter-national relations.	Related	Course integrates political and cultural aspects of sustainability.
UGRD	HIST	3230	History	College of Fine Arts, Humanities and Social Sciences	World of the Atlantic (Formerly 43.323)	The concept of the Atlantic world arose to describe the interactions of the peoples of the Americas, Europe, and Africa through trade, conquest, colonialism, independence and beyond. In this class, we will consider the cultural, economic, and political relationships that are formed and change over time between these groups. We will pay special attention to historical approaches to studying and writing about the Atlantic World.	Related	Course explores the sustainable relationships across the Atlantic world integrating cultural, economic and political aspects of sustainability.
UGRD	HIST	3340	History	College of Fine Arts, Humanities and Social Sciences	The French Revolution and Napoleon (Formerly 43.334)	This course will involve students directly in critical consideration of the central events and issues of the Revolutionary and Napoleonic periods, with an eye to their longer-term historical resonances in France, Europe and beyond. The core problems we will be discussing are ones which have remained vital in modern and even contemporary political history: the nature of liberty, the nation and national identity, equality and inequalities, violence and terror in politics, the cult of the leader, war and empire.	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	3360	History	College of Fine Arts, Humanities and Social Sciences	Problems of Modern Ireland (Formerly 43.336)	This course focuses on a discussion of the problems in Modern Irish History, how they became problems and what people have tried to do to resolve them. You will also learn about the nature of both history and human beings who have made history, and you will learn how to analyze historical issues, and come to some logical and defensible conclusion about the nature of those events and people. In this course, particularly, you will learn how to analyze events in terms of the challenges of economic, political and social claims by different groups with their competing values.	Related	Course focuses on the economic and social problems that face the Irish people in modern times.
UGRD	HIST	3370	History	College of Fine Arts, Humanities and Social Sciences	Germany Since 1871 (Formerly 43.337)		Related	Course integrates social and political aspects of sustainability.

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UGRD	HIST	3430	History	College of Fine Arts, Humanities and Social Sciences	Fascism and the Radical Right in Twentieth Century Europe (Formerly 43.343)	This course will offer a comparative exploration of the deep and enduring appeal of fascism and far rightist politics in twentieth century Europe. Beginning with the nationalist revival and cultural crisis of the late nineteenth century and the cataclysm of World War I, we will trace the rise of the radical right to political prominence in Europe in the 1920's and 1930's. While retaining a Europe-wide perspective throughout, we will analyze in particular detail the Fascist and National Socialist seizures of power in Italy and Germany, and examine their efforts of political, social, economic and cultural mobilization. Issues covered will include fascist political communication and governance, terror and ""normality"" in everyday life, labor and youth policy, racism and racial purification, and gender and reproductive politics, among others. In the final section of the course, we will contemplate the historical legacy of fascism after 1945, focusing on the politics of memory and representation in post-war Germany, Italy and Europe more generally, and assessing the recent resurgence of fascist and quasi-fascist political tendencies in the 1980's and 1990's.	Related	Course integrates political, social and economic aspects of sustainability.
UGRD	HIST	3440	History	College of Fine Arts, Humanities and Social Sciences	Revolutions in the Modern World (Formerly 43.334)	In this comparative history course, we look at the theories of Marx, Barrington Moore, Crane Brinton, Theda Skocpol, William Sewell, and others on the causes, dynamics, and outcomes of revolutions in the modern world. We then consider the history of the French, Russian, Vietnamese, and Iranian Revolutions (list may vary each semester) to see how well the theories fit the events. The course ends with a discussion of whether the pattern and analyses discussed in the course are helpful in understanding a contemporary revolution, such as that in Egypt.	Related	Course integrates political, social and economic aspects of sustainability.
UGRD	HIST	3510	History	College of Fine Arts, Humanities and Social Sciences	Captivity Narratives and Colonial Societies (Formerly 43.351)	The long sequence of military conflicts in New England at the turn of the eighteenth century led to an equally long sequence of accounts describing the experiences of English colonists taken captive by Native American or French military forces. While these narratives remain the best known examples of this particular literary genre in the United States, this class will explore the multitude of ways in which the captivity narrative was used in colonial North America by people of different races and cultures.	Related	Course integrates cultural and political aspects of sustainability with focus on captivity.
UGRD	HIST	3520	History	College of Fine Arts, Humanities and Social Sciences	The Coming of the American Revolution (Formerly 43.352)	A study of 18th-century British America with emphasis on the paradoxes of unity and diversity, Anglophilia and Anglophobia, slavery and freedom, and enlightenment rationalism and evangelical religion. The course also deals with the major causes, events, and interpretations relating to the coming of the American Revolution. Offered on a rotating basis.	Related	Course integrates cultural and political aspects of sustainability.
UGRD	HIST	3530	History	College of Fine Arts, Humanities and Social Sciences	The French and Indian and Revolutionary Wars (Formerly 43.353)	The years between 1754 and 1784 saw drastic change on the North American continent and around the world for Britain and its colonies. Colonists in North America went from being devout British subjects during the French and Indian War to rebelling and founding their own new country during the American Revolution. In turn, the British Empire went from spending millions of pounds on North America in the 1750's to barely committing the resources necessary for fighting the Revolution. This class examines these cultural and political transitions in context with discussions on the varied populations of North America who experienced them.	Related	Course integrates cultural and political aspects of sustainability.
UGRD	HIST	3590	History	College of Fine Arts, Humanities and Social Sciences	Democracy in the United States 1800-1860 (Formerly 43.359)	The course examines what is often referred to as the Golden Age of American Democracy. How much power did ordinary Americans have in the political system? What motivated people to participate in politics? What roles did women and racial minorities play in American politics despite not being able to vote?	Related	Course integrates political and social aspects of sustainability.
UGRD	HIST	3620	History	College of Fine Arts, Humanities and Social Sciences	The Twenties and the Thirties (Formerly 43.362)	An examination of the emergence of the corporate and governmental institutions of modern America set in two turbulent decades of cultural and political ferment that involved both booming prosperity and the economic collapse of the Great Depression.	Related	Course integrates political and social aspects of sustainability.

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UGRD	HIST	3790	History	College of Fine Arts, Humanities and Social Sciences	United States Industry Twentieth Century (Formerly 43.379)	An exploration of the rapid growth of the American economy in the 20th century, including the evolution of the large corporation and the mass production assembly line. Particular attention is devoted to the ways in which immigrants, women, and the African Americans were affected by the rise of big business. The course also traces the decline of the traditional U.S. manufacturing base following the Second World War and the impact this had on the working class and their unions.	Related	Course explores the economic dynamics on 20th century America, specifically the rise of mass production and corporate powers.
UGRD	HIST	3800	History	College of Fine Arts, Humanities and Social Sciences	Work and Society (Formerly 43.380)	Provides a survey of labor history from the colonial period to the present focusing on the interrelationship between culture and work in American society and on the dynamics of technical and economic changes on the organization of work processes.	Related	Course incorporates cultural, social, and economic aspects of sustainability with a focus on labor history.
UGRD	HIST	3810	History	College of Fine Arts, Humanities and Social Sciences	United States in the 1960s	This course examines the United States during the 1960s. General themes include the stifling and freeing of dissent, the ¿rights revolution,¿ liberal social and economic policy, foreign policy in a bipolar world, redefinition of values and morals, changing relations between women and men, increasing concern with environmental pollution, the growing credibility gap between citizens and their government, and rise of the ¿New Right¿.	Related	Course relates to social and economic policies present in 1960s America.
UGRD	HIST	3820	History	College of Fine Arts, Humanities and Social Sciences	The American West (Formerly 43.382)	Involves readings and discussions of the history of the American frontier and the place of the frontier in American society and thought.	Related	Course integrates social and political aspects of sustainability.
UGRD	HIST	3890	History	College of Fine Arts, Humanities and Social Sciences	Ancient History in Film (Formerly 43.389)	Ancient History in Film seeks understand the interconnection between ancient texts, social history and pop culture in American cinema. This course is more than an excuse to watch fun films and gain academic credit. It will engage the primary texts that are the foundation for these cinematic creations while investigating the social and cultural influences that shaped the making of these movies. Ultimately, this course will provide a clearer view of our own world through the lens of moviemakers mimicking the Greco-Roman world. We will read primary texts in translation, modern analyses of these movies and you are responsible to watch an entire film between class sessions. All films are on reserve in the Media Center of the O'Leary Library.	Related	Course integrates social and cultural aspects of sustainability.
UGRD	HIST	3930	History	College of Fine Arts, Humanities and Social Sciences	History of the Middle East and Islamic World (Formerly 43.393)	This course examines the history of the Middle East and the Islamic World from the time of Muhammad to the present. It provides an introduction to the history of this often turbulent region. It exposes students to the processes and patterns that have shaped the history of the Islamic World. The course examines the historical roots of the many challenges that the region faces today.	Related	Course integrates social and political aspects of sustainability.
UGRD	HIST	3960	History	College of Fine Arts, Humanities and Social Sciences	Alcohol In American History (Formerly 43.396)	This course uses the production, distribution, consumption, and prohibition of alcoholic drinks as a lens for studying cultural, political, and economic change in American life from the colonial era to the present.	Related	Course integrates cultural, political and economic aspects of sustainability by examining the role of alcohol in American life.
UGRD	HIST	4100	History	College of Fine Arts, Humanities and Social Sciences	Olympic Games and World's Fairs (Formerly 43.410)	The course studies Olympic Games and World's Fairs from the mid-nineteenth century to the present. We examine how these international festivals participate in and contribute to six themes in the history of that period: nationalism and internationalism, mechanization of industry, modern architecture and urban planning, consumer culture, racial politics, and the Cold War. Students write brief papers connection these themes and one or more game or fair and a research paper on a relevant topic. Special attention is given to certain icons, like the Crystal Palace, the Eiffel Tower, the Nazi Olympics, and the Mexico City games.	Related	Course integrates cultural, racial and political aspects of sustainability.
UGRD	HIST	4210	History	College of Fine Arts, Humanities and Social Sciences	The Age of European Global Expansion, 1400-1850 (Formerly 43.421)	This course examines the history of European global expansion from 1400-1850. The course begins with the medieval roots of European expansion. We then focus our attention on the expansion of the seaborne empires of Portugal and Spain beginning in the fifteenth century and those of their later challengers-the Dutch, the French, and the British. This course emphasizes how European efforts at empire building in the early modern period were often limited, a process shaped by capacities of the many diverse local populations that Europeans encountered. In addition, European expansion aided in the processes of global integration as it promoted the exchanges of goods,people,germs,plants, diets, ideas, and cultures.	Related	Course integrates economic, cultural and social aspects of sustainability in European global expansion.

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UGRD	HIST	3100	History	College of Fine Arts, Humanities and Social Sciences	History of New England (Formerly 43.310)	Explores the evolution of New England society from pre-Columbian to the Post-Industrial, emphasizing the ways succeeding generations of New Englanders have confronted social and economic change. Topics include: white-Indian relations, ecological change, Puritanism, the New England town, the industrial revolution, the rise of cities, immigration, ethnic and class conflict, and the distinctiveness of the region.	Related	Course integrates social and economic aspects of sustainability.
UGRD	HIST	3550	History	College of Fine Arts, Humanities and Social Sciences	Jacksonian America (Formerly 43.355)	An investigation of the social, political, and economic developments in the United States from 1815 to 1848. Special emphasis is placed on the spread of capitalism, the growth of reform movements, the development of cities, and the conflict over slavery.	Related	Course integrates social, political and economic aspects of sustainability.
UGRD	HIST	4010	History	College of Fine Arts, Humanities and Social Sciences	History Writing and Community (Formerly 43.401)	Restricted to upper-level students and available only with permission of the instructor, this course offers a select number of students the opportunity to work for non-profit and governmental organizations within Lowell. Such organizations might include the National Park Service; Community Teamwork Inc.; Girls Club of Lowell; St. Athanasius Church; American Textile History Museum, and so forth. The course is primarily intended for History majors. Students will utilize their skills in research, writing, and analysis to assist an organization with its documented needs (e.g., conduct research on history of the organization; write a pamphlet or short article; organize oral history interviews; analyze the urban context in which the organization has developed). Students receive academic credit, along with invaluable work-related experience.	Related	Course offers students the opportunity to work for non-profit organizations within the Lowell community utilizing research and writing skills to assist the organization with historical documentation needs.
UGRD	HONR	1100	Honors	0	First Year Seminar in Honors: Text in the City (Formerly HON 110)	The First Year Seminar in Honors (FYSH) uses Lowell as its text. Rich in history and culture, and the students' home for the next four years, the City of Lowell offers a perfect topic to promote connections while learning how to view the city through the lens of the Humanities. Students will develop library research skills, including facility with primary and secondary sources, and an appreciation for the narratives that lie in buildings, objects, and what people leave behind. Activities include field trips, readings, writing, and an artistic interpretation. As important, students will have the opportunity to form strong connections to each other, to the faculty, and to the community. Note: New course, but combination of current 59.102 and 59.103 in one semester. A unit on food sustainability and urban agriculture with Mill City Grows has been added to this course.	Related	Course examines the social and economic dynamics of sustainability to the city of Lowell.
UGRD	BUSI	1500	Intercollegiate Business	Manning School of Business	Business 101 (Formerly 66.017, MGMT 150, BUSI 150)	This course will provide a foundational understanding of business, the various types of business organization, the key functional areas of business and how these functional areas are interconnected. Crucial skills such as use of technology, team-building, information literacy and communication will be emphasized. In addition, the course will provide an overview of contemporary business issues such as ethics and globalization. A major course goal is to enable students to gain a basic understanding of career opportunities particularly in relation to the areas of specialization within the Manning School of Business undergraduate curriculum.	Related	Course integrates economic and global aspects of sustainability.
UGRD	BUSI	3800	Intercollegiate Business	Manning School of Business	Business Ethics (Formerly BUSI 380)	This course will explore the intersection between business leadership and ethics in various context. It provides the opportunity for students to explore complex issues in societal and professional contexts while engaging in probing conversations with classmates.	Related	Course integrates economic and social/ethical aspects of sustainability.
UGRD	ENGN	2000	Intercollegiate Engineering	Francis College of Engineering	Community-based Engineering Project I (Formerly 25.200)	Students work on multi-disciplinary teams and apply their engineering problem-solving skills on community-based design projects.	Related	Course integrates social aspects of sustainability by using engineering skills to solve community based projects.
UGRD	ENGN	3000	Intercollegiate Engineering	Francis College of Engineering	Community-based Engineering Project II (Formerly 25.300)	Students work on multi-disciplinary teams and apply their engineering problem-solving skills on community-based design projects.	Related	Course integrates community and social aspect of engineering problem solving.
UGRD	ENGN	4000	Intercollegiate Engineering	Francis College of Engineering	Community-based Engineering Project III (Formerly 25.400)	Students work on multi-disciplinary teams and apply their engineering problem-solving skills on community based design projects. Completion of 25.400, 25.300, and 25.200 can count as a mechanical engineering technical elective (academic petition required).	Related	Course integrates community and social aspect of engineering problem solving.

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UGRD	ENGN	1030	Intercollegiate Engineering	Francis College of Engineering	Environmental Biotechnology (Formerly 25.103)	This UML TEAMS Academy course will investigate the chemical and biological impact of human activity on aquatic environments. A specific focus of this course will be to observe the behavior of microorganisms impacted by pollutants introduced into the environment by humans. Students will explore possible engineering solutions to alleviate the problems caused by pollutants. This course can be described as ""inquiry based discovery"" and will rely heavily on laboratory investigations and laboratory based projects analyzing environmental samples collected in the field.	Related	Course examines the chemical and biological impact of human activity and the negative impact it has on the aquatic environments.
UGRD	FAHS	3030	Intercollegiate FAHSS	College of Fine Arts, Humanities and Social Sciences	Society and Technology (Formerly 59.303)	How safe is safe enough? Who really was Dr. Frankenstein? Was it possible not to create the A bomb? In this course we study decision-making capabilities crucial to survival in a technological age and examine the many value issues involved in understanding the nature of technological risk and its impact on modern society. Focusing on questions of scientific responsibility and societal safety, this course examines the changing attitudes toward technology and values.	Related	Course focuses on the impact of technological risk on society and integrating social justice, ethical and health and safety aspects of sustainability.
GRAD	HSCI	5770	Intercollegiate Health	College of Health Sciences	Health Disparities in a Global Economy (Formerly 30.577)	This course examines the impact of a global economy on health disparities and the impact of health on global economic sustainability. The interconnectedness of health across nations and regions in a global economy presents new challenges. The growing health disparities between wealthy and poor countries will be analyzed. Students will be encouraged to anticipate future health challenges in an expanding global economy and propose solutions to the growth of global health disparities. Cross cultural understanding of the environmental and economic impact on health disparities of the world's populations will be analyzed, including access to quality, affordable health care.	Related	Course examines the relationship between global economic stability and health issues.
UGRD	HSCI	3080	Intercollegiate Health	College of Health Sciences	Global Health (Formerly 30.308)	The focus of this course is on examining health issues from a global perspective including issues related to maternal and child health, aging, infectious diseases, sanitation, and health inequality. Nutritional and environmental health issues in diverse societies are analyzed. Social determinants of health and access to health care in developing and developed countries are emphasized.	Related	Class integrates environmental and human health aspects of sustainability from global perspective.
UGRD	HSCI	1021	Intercollegiate Health	College of Health Sciences	Introduction to Public Health (Formerly 30.102)	Public health topics, both historical and contemporary are of importance to all citizens and to societal decisions. This survey course provides a foundation for understanding public health through exposure to current health care and policy issues viewed through the perspective of multiple disciplines. Methodology for understanding population health and developing critical thinking and decision-making skills in the analysis of public health issues using a population-based perspective will be developed. The course will provide an ecological understanding of the causation and prevention of disease with an emphasis on health issues that affect society as a whole.	Related	Focuses on the health and environmental aspects of sustainability.
UGRD	HSCI	3060	Intercollegiate Health	College of Health Sciences	Introduction to Gerontology (Formerly 30.306)	This course examines human aging from a multidisciplinary and developmental perspective. The course will focus on the adult years of the life span. The social-psychological factors involved in adjustments to the aging process, to retirement, to family, to leisure, to aloneness, to death and bereavement will be discussed together with such special concerns of the elderly as widowhood, finances, religion, sexuality and health problems. Rehabilitative strategies such as remotivation and reality orientation are included.	Related	Class integrates social and human health aspects of sustainability as they related to human aging.
UGRD	HSCI	2220	Intercollegiate Health	College of Health Sciences	Health and Disease Across the Lifespan (Formerly 30.222)	This course will introduce the basic principles that promote health of individuals throughout the lifespan. Physiological, socioeconomic, economic, and behavioral factors that impact health, disease, and quality of life across the lifespan will be examined. Health assessment tools will be reviewed. The course emphasizes the role of nutrition and physical activity for health promotion and disease prevention across different life stages and the impact of aging on health and disease. Major causes of morbidity and mortality in the United States will be discussed.	Related	Class relates to the socio-environmental aspect of sustainability.
UGRD	HSCI	1031	Intercollegiate Health	College of Health Sciences	Life and Health (Formerly 30.103)	Life and Health	Related	Course integrates human health aspect of sustainability.

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UGRD	HSCI	3090	Intercollegiate Health	College of Health Sciences	Universal Design in the Promotion of Health (Formerly 30.309)	This is a three-credit interdisciplinary undergraduate blended course (face-to-face and online). The is course is designed to examine the principles of universal design and investigate challenges of equity, access and inclusion in healthy communities. Undergraduate students from a variety of disciplines will examine universal design and Assistive Technology (AT) that enhances the participation of individuals with a physical, emotional, sensory or intellectual and cognitive disability in education, community development, health care, recreation and public policy. The course reviews design concepts and the use of Assistive Technology as it relates to education, communication, vocation, recreation, and mobility for individuals with disabilities. Laws focusing on assistive technology in the home, school, community, and the work place will be examined. The course explores both 'low tech' and 'high tech' types of assistive technologies that are available to support people with disability, based on the ICF model of disability. Interaction with users of assistive technology is accomplished through an experiential learning project. Students will engage in a team project that completes a thorough examination of a particular access or functional challenge and the use of universal design and AT to increase participation and minimize the effects of the person's impairments.	Related	Course incorporates social justice and equity aspects of sustainability as they relate to healthy communities and individuals.
UGRD	HSCI	4020	Intercollegiate Health	College of Health Sciences	Global Health Experience (Formerly 30.402)	The Global Health Experience provides an experiential learning experience in health within a country outside of the United States. Students will study the health issues of a given country while examining the socio-cultural, economic and environmental determinants of health within that society. The strengths and weaknesses of the existing health care system will be analyzed. Students will explore the culture, environment, and health care system under the direction of School of Health and Environment faculty.	Related	Course provides students an overview of global health issues facing various nations and ways in which these problems can be solved.
UGRD	LGST	3700	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Real Estate Law (Formerly 41.370)	This course examines contracts for the sale of real estate, deeds, title examinations, security for real estate transactions, methods and problems of co-ownership, zoning ordinances, brokerage contracts, leases and landlord, and tenant rights and liabilities.	Related	Course relates to law that has economic impact in the United States.
UGRD	LGST	3810	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Women and the Law (Formerly 41.381)	This course presents legal issues that often or particularly affect women. Topics may include sex discrimination, sexual harassment, rape, marriage, divorce, reproductive control, surrogate motherhood, and custody.	Related	Course integrates social and ethical aspects of sustainability with focus on legal issues that particularly affect women.
UGRD	LGST	3630	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Corporate and Property Law (Formerly 41.363)	This course studies the law pertaining to business entities and structures. Partnerships, limited partnerships, and joint ventures are studied at the outset of the course. The main emphasis is on elements of the corporate structure. The last part of the course deals with personal and real property with coverage of wills and trusts. This course is highly recommended for pre-law students, CPA students, and paralegal students.	Related	Course relates to the economic dynamic of sustainability.
UGRD	LGST	3760	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Family Law (Formerly 41.376)	This course studies the critical family law issues facing society today. Subject matter examined may include the law of marriage, custody, adoption, divorce, child support, juveniles, right to die, fetal tissue transfer to prolong the life of another, reproduction control, and surrogate parenting. This course is taught from a legal and human values perspective.	Related	Course integrates social and ethical aspects of sustainability.
UGRD	LGST	3600	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Legal Issues in Racism (Formerly 41.360)	This course presents a study of racial discrimination in the United States. Emphasis is placed on relevant constitutional provisions, statutory provisions, and on United States Supreme Court cases.	Related	Course integrates social justice aspect of sustainability.
UGRD	LGST	3790	Legal Studies	College of Fine Arts, Humanities and Social Sciences	The Relationship of Law, Logic, and Ethics (Formerly 41.379)	This course examines the impact of ethical viewpoints on the structure of legal doctrines. It stresses the fact that the study of law is a study of ethics as well as logic.	Related	Course integrates social and ethical aspects of sustainability.
UGRD	LGST	3660	Legal Studies	College of Fine Arts, Humanities and Social Sciences	International Law (Formerly 41.366)	This course introduces the body of international rules, customs, and regulations which are in force between nations. Specific legal issues involving a study of multinational, cultural, political, economic, and ethnic perspectives are addressed. Topics covered include human rights, war prevention, foreign policy, tort and criminal liability, business trade practices, and dispute settlement.	Related	Course integrates social, cultural and political aspects of sustainability as they relates to legal interactions between nations.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	LGST	3770	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Elder Law (Formerly 41.377)	This course introduces students to the major architectural components of the legal environment of the elderly, including Medicare, Medicaid, SSI, pensions, nursing homes, assisted living,estate management, and related issues.	Related	Course integrates social and ethical aspects of sustainability.
UGRD	LGST	3780	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Comparative European Community Law (Formerly 41.378)	This course deals with the relationship between European Community law and the law of the United States; the operation and impact of community law in the United States; and the role of the European courts in interpreting community law. International treaties, laws, and regulations affecting the free movement of people, goods and services are traced.	Related	Course examines the relationship between community law in both Europe and the United States.
UGRD	LGST	3850	Legal Studies	College of Fine Arts, Humanities and Social Sciences	Immigration Law (Formerly 41.385)	Studies the immigration, nationality, and naturalization laws of the United States. The topics discussed are: the immigrant selection system, the issuance of immigrant and nonimmigrant visas; grounds of excludability of aliens and waiver of excludability; grounds for deportation of aliens and relief from deportation; and change of status within the United States including legalization, refugee, and asylum status.	Related	Course examples immigration law incorporating social an ethical aspects of sustainability.
UGRD	MGMT	4400	Management	Manning School of Business	International Business (Formerly MGMT/66.440)	Special problems of overseas operations of American firms. Financial, marketing, human resource, and legal problems of the multinational enterprise. State trading, economic integration and international regulatory agencies.	Related	Course integrates social and economic aspects of sustainability as they relate to international business.
UGRD	MGMT	4800	Management	Manning School of Business	Nonprofit Management (Formerly MGMT / 66.480)	Topics of current interest in management. Subject matter to be announced in advance.	Related	
UGRD	MGMT	4350	Management	Manning School of Business	International Management (Formerly MGMT/66.435)	Comparison of management concepts, systems and practices in different societies, and institutional settings. The impact of economic, social, political, and cultural variables on management styles, processes and organizational structures.	Related	Course integrates economic, social, political and cultural aspects of sustainability as they relate to management practices and organizational structures.
UGRD	MGMT	4500	Management	Manning School of Business	Labor, Diversity, and Human Resource Management (Formerly MGMT/66.450)	In this course we examine solutions to two emerging questions: how do we manage, motivate, and reward the increasingly diverse American work force, and what part will American labor unions play in this process. We will study these issues using a variety of sociological, psychological, economic, legal, managerial, and comparative materials, but the focus will remain on the options available to the human resource manager.	Related	Course focuses on the social, economic and ethical aspects of sustainability examining labor unions and diversity in the workplace.
UGRD	MKTG	2010	Marketing	Manning School of Business	Marketing Principles (Formerly MKTG 201/62.201)	The role of marketing in the economy. The elements of the marketing mix--product, price, distribution, and promotion--are discussed in the context of social and political constraints on marketing activity.	Related	Course integrates social and political aspects of sustainability as they relate to the role of marketing in the economy.
UGRD	MKTG	4120	Marketing	Manning School of Business	Global Marketing (Formerly MKTG 412/62.412/62.303)	Course number was formerly 62.303. Focuses on the marketing aspect of global business. Emphasis is given on cultural dynamics and economics as well as political, social and regulatory constraints as they affect the global marketing practice and strategy implementation.	Related	Course integrates political, social and cultural aspects of sustainability as they relate to global marketing.
UGRD	MECH	1070	Mechanical Engineering	Francis College of Engineering	Introduction to Mechanical Engineering (Formerly 22 / 25.107)	This course provides a hands-on introduction to mechanical engineering and the engineering design process. Through assignments and projects, students learn how to: identify a problem, develop alternative solutions, select the best alternative, make critical decisions, and work as a team. Lecture and lab component.	Related	
GRAD	MECH	5840	Mechanical Engineering	Francis College of Engineering	Ocean Engineering (Formerly 22.584)	Physical Properties of the Ocean Environment, ocean wave mechanics, computer solutions of wave interactions, physical modeling of marine vehicles and coastal environments (modeling and scaling laws), resistance and propulsion of surface ships and submarines, and forces on floating and submerged objects such as buoys, pipelines, piers, and breakwaters. Research report required summarizing some aspect of ocean engineering.	Related	Course focuses on elements of the ocean in an engineering context.
UGRD	MECH	4860	Mechanical Engineering	Francis College of Engineering	Ocean Engineering (Formerly 22.486)	Summary of the ocean environment. Fluid mechanics of ocean waves. Modeling and scaling laws for ships, submarines, and river and estuary flows. Hydrodynamics of offshore and coastal structures. Floating and submerged body hydrodyamics. Marine propulsion. Introduction to various underwater systems.	Related	Course provides a summary of the ocean environment including hydrodynamics and mechanics of ocean waves.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	MTEC	2410	Mechanical Engineering Technology	Francis College of Engineering	Elements of Thermodynamics I (Formerly 23.241)	This course presents a thorough treatment of the concepts and laws of thermodynamics. The first law (energy) and the second law (entropy), properties of liquids and gases, and common power cycles (Rankine and Otto) are covered. Included is an overview of the global energy problem and power generation technologies, both established and novel	Related	Course integrates overview of the global energy problem and power generation technologies.
UGRD	MTEC	2430	Mechanical Engineering Technology	Francis College of Engineering	Elements of Thermodynamics II (Formerly 23.243)	This course is a continuation of Thermodynamics I analyzing in more detail various real world, practical power generation cycles, such as Rankine, reheat, regenerative, Otto, and Diesel. Also covered are refrigeration cycles, the basics of psychrometry, and the thermodynamics of combustion.	Related	Course covers the global energy problem by providing an understanding of the laws of energy and entropy.
UGRD	MTEC	4140	Mechanical Engineering Technology	Francis College of Engineering	Engineering Economics (Formerly 23.414)	This course introduces students to accounting and finance operations and principles, and how they impact engineering and manufacturing activities in both analytical and forward looking planning activities. Topics covered include financial statements, costing, depreciation, time value of money, cash flows, capital budgeting, and capital recovery with the objective of building working financial models for a technical environment.	Related	Course focuses on the economic dynamic of sustainability.
GRAD	MLSC	5410	Medical Technology	College of Health Sciences	Introduction to Public Health and the Public Health Laboratory (Formerly 36.541)	This course is designed to provide an overview of public health and the public heath laborabory covering topics such as the legal basis and history of public health, public health structure, communications and interactions, and epidemiology. Emphasis will be placed on the role of the public health laboratory and its core functions, its role in policy development, infectious disease, environmental issues, emergency preparedness, newborn screening, global issues, and public health research. Public health laboratory methodology, regulation and improvement, and quality assurance will also be examined.	Related	Course focuses on public health including environmental issues.
UGRD	MLSC	3360	Medical Technology	College of Health Sciences	Life Cycle Nutrition (Formerly 36.336)	Biology of the life cycle including development, growth, maturation, and aging and its impact on nutritional requirements of humans from the zygote to the elderly is considered. How to meet these nutritional requirements is discussed relative to the feeding issues and context of each major life stage. Course emphasizes the critical analyses of beneficial and adverse outcomes of various nutrient intakes and dietary patterns of the nutritional status and well-being through integration of nutrition and other health sciences in understanding nutritional needs during the life cycle. Analysis of cultural, environmental, psychosocial, physical, and economic factors affecting nutritional status through the life span will also be discusses. Methods of nutritional assessment for each stage of the life cycle will be examined.	Related	Course integrates cultural, environmental, and economic aspects of sustainability as they relate to nutritional status.
GRAD	NUTR	6020	Nutritional Sciences	College of Health Sciences	Public Health Nutrition(Formerly 36.602)	This course will examine a broad range of community-based nutrition research, programs and policies within the United States. Settings for public health nutrition programs have broadened to include non-profit agencies, worksites, health centers, clinics, hospitals, schools, churches, supermarkets, sports centers, senior centers, and emergency feeding sites. Students will engage in experiential learning and use case studies to practice innovative approaches to community nutrition. Field visits will allow students to interact with and learn from public health experts Students will be required to write a funding proposal for a community nutrition program that they have developed in small groups.	Related	Course focuses on public health in relation to access to proper nutrition.
GRAD	NUTR	6030	Nutritional Sciences	College of Health Sciences	Global Nutrition(Formerly 36.603)	This course is an examination of the food and nutrition issues around the world. The impact of food production and food intake on the environment and global nature of our food systems will be reviewed. The course will also include consideration of specific nutrient deficiencies, as well as nutrition-related aspects of infectious and chronic disease along with the programs and resources available to combat malnutrition for children and adults worldwide.	Related	Course explores the global health crisis in regards to lack of proper nutrition.

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UGRD	NUTR	2100	Nutritional Sciences	College of Health Sciences	Nutrition and Health(Formerly 35.210)	This course is an introductory course to the science of nutrition as it applies to everyday life and health. Focus will include the six major nutrients: carbohydrates, lipids (fats), protein, vitamins, minerals, and water and their importance in the human body. Digestion, absorption, and metabolism in the human body will be introduced. The course will also examine energy balance and weight management as they relate to nutrition and fitness. The impact of culture, demographics and ethnicity on nutritional intake will be discussed. Students will explore the relationship between nutrition and health through laboratory experiences.	Related	Course examines the relationship between proper nutrition and the good health.
UGRD	NUTR	2060	Nutritional Sciences	College of Health Sciences	Human Nutrition(Formerly 35.206)	This course provides an overview of nutrition and the components of a nutritious diet during the various stages of the life cycle. It emphasizes the impact of nutrition on the major contemporary health problems in the United States. Nutrition issues, trends and research, and their effect on society and the legislative process will be explored.	Related	Course integrates nutrition and human health. Students study current social health issues in the United States.
UGRD	NUTR	3450	Nutritional Sciences	College of Health Sciences	Community Nutrition (Formerly 36.345)	This course explores the role of the nutrition professional in community needs assessment, intervention development and evaluation, and in forming domestic nutrition policy. Nutrition problems in contemporary communities and of selected target groups in the United States and in developing countries are examined. Programs and strategies to meet nutrition needs outside the acute care setting, such as nutrition education and food assistance are explored. Local, state,and national nutrition policy and initiatives in nutrition will also be examined.	Related	Course relates to the health of communities and nutrition policies established in the United States and other countries.
UGRD	NUTR	3720	Nutritional Sciences	College of Health Sciences	Obesity & Weight Control(Formerly 36.372)	Etiology, pathophysiology, and treatments of obesity, anorexia nervosa, and bulimia are reviewed. Role of hereditary, neurological, metabolic, and environmental mechanisms are discussed. Particular emphasis on obesity.	Related	Class relates environmental factors that contribute to health issues.
UGRD	POMS	4010	Operations and Information Systems	Manning School of Business	Logistics and Transportation (Formerly 63.469/POMS 401)	This case-based course will examine methods and strategies for managing and controlling material movement, with particular emphasis on international operations, from the purchase of production materials to the control of work in process to the distribution of the finished product. Strategies that will be discussed include the design of international distribution networks, the use of third-party logistics providers, and the creation of links between logistic systems and marketing to create competitive advantage. The course will also explore tactical issues that must be managed to pursue a logistics strategy successfully, including choices regarding means of transportation, packaging, and inventory policies. Underlying themes of the course will be the use of information technologies (such as electronic data interchange and bar coding) and mathematical models to support logistics decision-making.	Related	Course examines the dynamics of transportation and the socio-environmental impact.
UGRD	MIST	4070	Operations and Information Systems	Manning School of Business	Electronic Business (Formerly 63.407, MIST 407)	This course famiiliarizes students with current and emerging electronic commerce technologies using the Internet. Focus is on both Web Design and E-Business. The web design portion provides a foundation for designing dynamic interactive websites for electronic commerce. It addresses planning and developing well-designed websites that combine effective navigation with the balanced use of graphics, text, color, and database access. The electronic business section covers both the theory and practice of doing business over the Internet including issues relating to Internet techology for business advantage; managing electronic commerce funds transfer; reinventing the future of business through electronic commerce; business opportunities in electronic commerce; electronic commerce website design; social, political and ethical issues associated with electronic commerce; and business plans for technology ventures.	Related	Course integrates social, political and ethical issues associated with electronic commerce.

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UGRD	POMS	4020	Operations and Information Systems	Manning School of Business	Global Supply Chain Management (Formerly POMS 402/63.402)	A supply chain consists of all of the activities and organizations required to produce and deliver a good or service from raw materials to the final end user. Global Operations and Supply Chain Management (GOSCM) involves the coordination of this complex network of organizations and flows of materials, funds, and information among and between the stages of a supply chain. GOSCM integrates the traditional business functions of operations, marketing, logistics, finance, and information systems in an international business context. The course traces the flow of products and services from development through delivery to the final user and will address topics such as global sourcing strategies, managing demand and supply uncertainties distribution strategies and logistics network design for global operations, global strategic alliances, and the role of information technology and Enterprise Resource Planning (ERP) in managing global supply chains.	Related	Course examines global operations and the impact on economies and national communities.
GRAD	PCST	5010	PCS	Peace and Conflict Studies	Strategies of Conflict Transformation (Formerly PCS 501)	This course will examine the underlying connections between causes of conflict on the local, national and global levels and the processes that advance peaceful resolution. The course is designed to provide a cross-disciplinary approach to the relevant social, political, economic and cultural conditions leading to conflict and the variety of approaches to solve such conflict through both violent and nonviolent means. The beginning of the course will focus on issues of power and inequality related to class, race (and related divisions of ethnicity, religion, caste, nationality, immigration status) and gender. We will look at structures and system of power ranging from the family, to the community, the workplace and the national and international dimensions. The goal is to link theoretical analysis with the study of practical problem solving.	Related	Course examines levels of conflict on how the social, political, cultural, environmental, and economic dynamics of sustainability are affected.
GRAD	PCST	5120	PCS	Peace and Conflict Studies	Community Conflict Resolution (Formerly PCS 512)	This course gives students an understanding of the main issues and solutions involved in community level conflict resolution; e.g., in neighborhoods, workplaces, and other institutions. It develops students' skills in practicing conflict resolution and/or evaluating programs in the field of dispute resolution.It is important to understand why conflict happens and how to resolve conflict.	Related	Course integrates the social aspects of sustainability by understanding issues related to community level conflict resolution.
GRAD	PCST	5230	PCS	Peace and Conflict Studies	Everyday Peace: Community-based Approaches to Peace and Peacebuilding (Formerly PCS 523)	This course will introduce students to a range of issues in community-based approaches to everyday conflict and peacebuilding. Premised on the idea that peace cannot be understood or studied in isolation of other of other social processes, the course will allow students to collectively engage with key conceptual, methodological and praxis related issues in peacebuilding drawing from community-based and critical perspectives in the social sciences, we will focus on developing the notion of 'everyday peace', that is, building community capacities and promoting social justice as an antidote to the normalized and endemic violence in society. The course will critically examine relevant empirical literature as well as ongoing peace initiatives that utilize community-based approaches.	Related	Course integrates the social aspects of sustainability by examining community-based approaches to conflict resolution and promoting social justice.
GRAD	PCST	5250	PCS	Peace and Conflict Studies	Gender, Work and Peace (Formerly PCS 525)	Gender, Work and Peace"" will explore the relationship between human rights, gender and nonviolence in the 21st century. We will examine how current and future reality can be shaped by related policies, specifically those on the micro and macro level concerned with gender. Today we live in a period of global transition comparable to the period that followed the Industrial Revolution. It presents us with enormous challenges and opportunities regarding factors we will address in class: economic globalization, government restructuring, work-family balancing, environmental safety at work, gender inequalities and the connection between human rights and dignity at work.	Related	Course integrates social and environmental aspects of sustainability by examining human rights, gender and nonviolence and addressing factors such as environmental safety at work and gender equality.
UGRD	PCST	1250	Peace and Conflict Studies	College of Fine Arts, Humanities and Social Sciences	Introduction to Peace and Conflict Studies (Formerly PCS 125)	This course will focus on the causes of conflict, conflict resolution methods, and ways to sustain peace. The course will explain and define each of those areas. A mid-term will be administered to examine the students' grasp of the concepts and key terminology. The second part of the class will emphasize student participation and the application of concepts learned earlier in class. The final is a take home exam that will require the application of theory and praxis in the field of Peace and Conflict Studies.	Related	Course integrates the social aspects of sustainability by focusing on the means to contain and continue peace between countries.

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UGRD	PCST	1700	Peace and Conflict Studies	College of Fine Arts, Humanities and Social Sciences	Community and Organizational Conflict (Formerly PCS 170)	Using a systems approach, students will move from interpersonal conflict to addressing conflict in groups. Students will explore the uniqueness of conflict in various kinds of groups and will examine models for assessment, analysis, process design, intervention, and evaluation in such situations of conflict. Using case studies and real life situations of group conflict and systemic injustice from families, organizations and communities, students will learn practical strategies for group facilitation, dialogue, problem solving, decision-making, and system change.	Related	Course integrates the social aspects of sustainability by exploring various conflicts between groups and communities around the world.
UGRD	PCST	4200	Peace and Conflict Studies	College of Fine Arts, Humanities and Social Sciences	Gender, Work and Peace (Formerly PCS 420)	Gender, Work and Peace"" will explore the relationship between human rights, gender and nonviolence in the 21st century. We will examine how current and future reality can be shaped by related policies, specifically those on the micro and macro level concerned with gender. Today we live in a period of global transition comparable to the period that followed the Industrial Revolution. It presents us with enormous challenges and opportunities regarding factors we will address in class: economic globalization, government restructuring, work-family balancing, environmental safety at work, gender inequalities and the connection between human rights and dignity at work.	Related	Course relates to the interaction between groups of people and the resulting nonviolence that comes from it.
UGRD	PHIL	3340	Philosophy	College of Fine Arts, Humanities and Social Sciences	Engineering and Ethics (Formerly 45.334)	A philosophical analysis of the ethical dimensions and responsibilities of the engineering profession. Specific case studies and ethical issues are analyzed through the application of some of the basic concepts and principles of traditional and contemporary ethical theories.	Related	Class integrates the social aspects of sustainability by examining ethical responsibilities in the filed of engineering.
UGRD	PHIL	2030	Philosophy	College of Fine Arts, Humanities and Social Sciences	Introduction to Ethics (Formerly 45.203)	Examines the basic issues and problems of ethics and values and a survey of some important alternative answers to the questions raised, on both an individual and a social level, by our necessity to act and to live in a rational and human way.	Related	Class examines the social context of ethics.
UGRD	PHIL	2060	Philosophy	College of Fine Arts, Humanities and Social Sciences	Introduction to Political Philosophy (Formerly 45.206)	Political philosohy is concerned with basic questions about community, public life, and social organization. This course will address issues such as the rights of the individual in relation to the power of the state and society; the nature and legitimacy of political authority and democracy; the significance of power, economics, justice and equality in social life; and the duties and responsibilities of citizens. We will also consider the philosophical meaning of communitarianism, liberalism, and republicanism, individualism, capitalism, and socialism, as well as the role of class, race, and gender in politics.	Related	Class integrates the social dynamics of sustainability, specifically human rights in relation to state power.
UGRD	PHIL	3610	Philosophy	College of Fine Arts, Humanities and Social Sciences	Equality, Justice and the Law (Formerly 45.361)	This class investigates the American fascination with the ""rule of law."" Questions to be considered include the following: What do we mean by the rule of law? What is the relation between law and morality? How does the rule of law promote justice, and what is its connection with the ideal of equality? What is the role of a written Constitution in protecting the rule of law? Special emphasis will be given to the Equal Protection clause of the Constitution and its role in prohibiting discrimination against disadvantaged groups, including racial minorities, women, and the handicapped. We will also consider in detail some theories of constitutional interpretation, including the Original Intent theory.	Related	Course integrates the social aspects of sustainability by examining law and equality.
UGRD	PHIL	3080	Philosophy	College of Fine Arts, Humanities and Social Sciences	Philosophy of Race and Gender (Formerly 45.308)	This course will focus on issues of identity and difference. We will discuss the ways in which group identities are formed and break down. We will discuss how differences are constituted and reconstituted. These issues are central to theories of race and gender, racism and sexism. Some of the questions which we will raise are these: What motivates forming group identities? How are they formed? How is identity used within oppressive social structures? How can it be used to transform society? Why do some differences make a difference and others don¿t? Can we choose our group identities?	Related	Class relates to the social dynamics of gender, race and equality.
UGRD	PHIL	3780	Philosophy	College of Fine Arts, Humanities and Social Sciences	Philosophy of Peace and Nonviolence (Formerly 45.378)	This course examines philosophical theories of peace, pacifism, and nonviolence. We will study ancient and modern accounts, secular and religious traditions, as well as feminist perspectives in the philosophy of peace and nonviolence. We will explore philosophical applications of nonviolence toward nonhuman animals and the natural environment, along with specific cases of nonviolent resistance in contemporary global conflicts.	Related	Course overs theories of peace as a way to maintain a sustainable future.

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UGRD	PHIL	3350	Philosophy	College of Fine Arts, Humanities and Social Sciences	Ethical Issues in Technology (Formerly 45.335)	This course will examine important ethical issues and value conflicts emerging in contemporary science and technology. Through readings and class discussions students will not only have an opportunity to explore the manner in which ethical and technical problems are related, but to develop insight into areas of ethical philosophy and modes of reasoning essential to an intelligent understanding of such issues.	Related	Class integrates the social aspects of sustainability by examining ethical responsibilities in the technology field.
UGRD	PHIL	3370	Philosophy	College of Fine Arts, Humanities and Social Sciences	Science & Meaning of Nature (Formerly 45.337)	The Scientific Revolution in seventeenth century Europe transformed our relationship to the world. This class analyzes the meaning of this transformation, inquiring into such questions as what defines science as a unique discipline, whether science and religion are intrinsically in conflict, and whether the lesson of science is that the universe is merely the result of impersonal laws and blind chance, or whether there is a place for meaning and purpose in the world.	Related	Course integrates the environmental aspects of sustainability associated with the relationship between science and nature.
UGRD	PHIL	3440	Philosophy	College of Fine Arts, Humanities and Social Sciences	The Idea of Nature (Formerly 45.344)	The changing contents and the changing epistemological, social, aesthetic, economic, and religious implications of the concept of nature.	Related	Course integrates the socio-economic aspects of sustainability by examining these in relation to nature.
UGRD	PHIL	3650	Philosophy	College of Fine Arts, Humanities and Social Sciences	Capitalism and Its Critics (Formerly 45.365)	This course explores the historical evolution of capitalism, from its early beginnings in the Enlightenment to the most recent debates about the free market and globalization. The focus will be on the debate over the vitues and vices of capitalism as distinct from other modes of economic and political organization. Concepts to be discussed will include freedom, equality and the distribution of wealth. Readings include Adam Smith, Karl Marx, Max Weber, Joseph S, and others.	Related	Course relates capitalism to the socio-economic dynamic of sustainability.
UGRD	PHIL	3660	Philosophy	College of Fine Arts, Humanities and Social Sciences	Globalization and Its Critics (Formerly 45.366)	The course explores globalization as the process of transformation of regional and national phenomena into global ones, analyzing its social, economic, political, and cultural aspects. Supporters view it as the progress of liberalization and democratization that develop peaceful international cooperation; critics see globalization as the expansion of the profit-seeking global corporations that abuse the less developed and vulnerable regions. The course readings include the works of Amartya Sen, Samuel Huntington, Joseph Stiglitz, and other leading economists, sociologists, and philosophers.	Related	Course explores globalization as social and economic fundamentals of sustainability.
UGRD	PHIL	3760	Philosophy	College of Fine Arts, Humanities and Social Sciences	The Ethics of War and Peace (Formerly 45.376)	This course examines theories about why human beings engage in mass killing, the history of moral deliberation about war in major religious traditions, and modern philosophical analyses of the diverse moral principles that those traditions have bequeathed to us. The course comprises three broad ethical questions. First when, if ever, is recourse to arms legitimate (jus ad bellum)? Second, what constraints should apply to military conduct (jus in bellos)? And third, how should wars end (jus post bellum)? These three questions will be systematically discussed by critically examining a selection of writings by historical and modern secular and religious thinkers.	Related	Course integrates the social aspect of sustainability by examining factors that relate to the ethics of human conflicts and the responses to these conflicts.
UGRD	PHYS	2450	Physics	Kennedy College of Sciences	Physical Properties of Matter (Formerly 95.245)	Fluid statics, dynamics of fluids, properties of solids, advanced topics in waves and vibrations, temperature and heat flow, kinetic theory of gases, thermodynamics, and the limits of classical physics.	Related	Course examines the physical properties of matter and its relationship to sustainability.
GRAD	PLAS	5330	Plastics Engineering	Francis College of Engineering	Coatings Science and Technology I (Formerly 26.533)	This course reviews the basic principles of design and formulation of waterborne, high-solids, powder resins used for the development of solvent-less ¿green¿ coatings and the use of bio-derived resins, mostly based on soybean oil and other renewable raw materials. The mechanisms and methods of curing and of polymerization for polymers used as coatings will also be covered.	Related	Course focuses on renewable raw materials.
GRAD	PLAS	5340	Plastics Engineering	Francis College of Engineering	Coatings Science and Technology II (Formerly 26.534)	A continuation of 26.533. This graduate course reviews the basic principles of design and formulation of waterborne, high-solids, powder resins that meet current manufacturing regulations. Rheology of polymer and pigment dispersion, and their application to coatings, inks and adhesives will be included here..	Related	Course focuses on renewable raw materials.

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UGRD	PLAS	2010	Plastics Engineering	Francis College of Engineering	Polymer Materials I (Formerly 26.201)	This introductory course in plastics materials first evaluates how commercial plastics were developed, characterized and compared throughout the relevant industry. Various ASTM testing protocols are reviewed followed by an initial study of commodity plastic materials, including polyethylene, poly (vinyl chloride), polystyrene, diene rubbers and other selected and relatively high-volume resins. Applicable commercial polymerization methods are introduced along with comparative structure/property relationships. Initial comparisons are drawn as between commodity thermoplastic resins and thermoset compositions. Comparative end-use applications are continuously discussed along with a consideration of selected environmental issues (recyclability).	Related	Class incorporates the economics and environmental considerations associated with the plastics industry including the study of plastic materials and recyclability.
UGRD	PLAS	2020	Plastics Engineering	Francis College of Engineering	Polymer Materials II (Formerly 26.202)	A critical review of the commercial family of materials known as engineering thermoplastics including an examination of relatively important thermoset polymer systems. Major commercial polymerization reactions are reviewed (e.g. applicable chain growth or step-growth polymerizations) including comparative market performance based upon mechanical, thermal, chemical properties and environmental considerations. Also considered are selective high performance plastic materials suitable for use at elevated temperatures and in other relatively extreme working environments. Recommended Pre-Req: 26.201 Polymer Materials I.	Related	Course integrates the environmental aspects of sustainability by examining environmental considerations associated with polymer systems.
UGRD	PLAS	1070	Plastics Engineering	Francis College of Engineering	Introduction to Plastics Engineering (Formerly 25.107/26.107)	This course is designed to teach basic principles of technical drawing, fundamentals of design, fundamentals of computer aided design (CAD), dimensioning and tolerances. Basic concepts of manufacturing, rapid prototyping and 3D printing are covered. The lecture component covers theoretical information, and the lab component covers hands-on learning, where students learn to use a commercial CAD software.	Related	Course relates plastic engineering industry to sustainable practices.
UGRD	POLI	1120	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to Comparative Political Systems (Formerly 46.112)	A cross-cultural analysis of various governmental systems; elements common to all forms of government are emphasized and variations among contemporary political systems are discussed. Balance between developed and Third World countries.	Related	Course incorporates the social aspects of sustainability by emphasizing the role of governmental systems in third world nations.
UGRD	POLI	1010	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to American Politics (Formerly 46.101)	An introduction to the politics, structure, and behavior of the American National Political Community	Related	Course integrates the social and political aspects of sustainability.
UGRD	POLI	1210	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to International Relations (Formerly 46.121)	Surveys some recent methods and approaches used in the study of international politics and provides an introduction to current problems of foreign policies of major world powers.	Related	Course examines the social relationships between international communities.
UGRD	POLI	4200	Political Science	College of Fine Arts, Humanities and Social Sciences	Reading and Simulation Experience International Organization (Formerly 46.420)	Students take part in a simulation of the proceedings of a regional or international organization, e.g., U.N., O.A.S., O.A.U., or the Arab League. They study all aspects of the selected institution but concentrate on key economic, social and security issues discussed in the body's debates. The course aims to give the student a clearer understanding of the forces and constraints which shape the foreign policies of individual states.	Related	Course integrates the social and political aspects of sustainability by simulating the proceedings of an international organization.
UGRD	POLI	2650	Political Science	College of Fine Arts, Humanities and Social Sciences	State and Local Politics (Formerly 46.265)	Examination and study of politics and government at the state and local levels, with emphasis on Massachusetts and New England. Practitioners from state and local government will meet with the class.	Related	Course incorporates the social aspects of sustainability by examining levels of government.
UGRD	POLI	3200	Political Science	College of Fine Arts, Humanities and Social Sciences	Gender Law and Politics (Formerly 46.320)	Explores legal constructions of gender by examining Supreme Court cases, federal legislation, historical documents, news stories, and scholarly essays on sexual inequality in the United States. Topics include the evolution of the family as a legal (and illegal) reality; political regulation of reproduction and sexual activity; feminist critiques of economic inequality; the rise and fall of affirmative action; the changing role of gender in class consolidation; and ongoing debates about the relationships between public and private life.	Related	Course integrates the social aspects of sustainability by examining sexual inequality in the legal system.
UGRD	POLI	3490	Political Science	College of Fine Arts, Humanities and Social Sciences	Politics of Race and Ethnicity (Formerly 46.349)	A study of the politics of race and ethnicity, focusing primarily on American society, and the racial and ethnic groups of the region.	Related	Course relates to the social dynamics of sustainability by examining race and ethnicity in American society.
UGRD	POLI	3500	Political Science	College of Fine Arts, Humanities and Social Sciences	Urban Politics and Policy (Formerly 46.350)	A study of political power in, and the political structures of urban areas and the major issues and conflicts currently confronting them.	Related	Course relates to the social dynamics of sustainability by examining major issues and conflicts in urban politics and policy.
UGRD	POLI	3530	Political Science	College of Fine Arts, Humanities and Social Sciences	Public Policy and Administration (Formerly 46.353)	An examination of the little studied fourth branch of government. Bureaucratic power in the American political system is reconsidered.	Related	Course relates to the social dynamics of sustainability by examining public policy and administration.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	POLI	3350	Political Science	College of Fine Arts, Humanities and Social Sciences	Constitutional Law and Politics (Formerly 46.335)	A study of constitutional law focused on the principles and structures of American government. The course will discuss the Constitution, the Bill of Rights, the origins of judicial review, and the principles of federalism, natural law, ordered liberty, limited government, separation of powers, equal protection, and due process.	Related	Course will provide an understanding of constitutional law through a social and political context.
UGRD	POLI	3370	Political Science	College of Fine Arts, Humanities and Social Sciences	Civil Liberties Law & Politics (Formerly 46.337)	A study of constitutional law focused on the evolution of the civil liberties decisions of the Supreme Court. The course will discuss the case law on freedom of religion, freedom of speech, freedom of the press, gun rights, search and seizure, rights of the accused, privacy, and other controversies that reflect the balance of liberty and authority in a free society.	Related	Course integrates the social aspects of sustainability by examining civil liberties.
UGRD	POLI	3780	Political Science	College of Fine Arts, Humanities and Social Sciences	International Political Economy (Formerly 46.378)	An examination of the politics of global economic relations stressing the role of international institutions, multinational corporations and other international actors on the policies of the nation-state.	Related	Course relates global relations among economic and social groups.
UGRD	POLI	3870	Political Science	College of Fine Arts, Humanities and Social Sciences	Politics of International Organizations (Formerly 46.387)	This coure will address the history, functioning, structure and politics of international organizations in world politics. International Governmental Organizations as well as Non-Governmental Organizations on the global and regional level will be analyzed and discussed. In a participatory and interactive class format students will develop analytical and critical thinking skills.	Related	Course examines the social dynamics of sustainability, specifically international organizations.
UGRD	POLI	1050	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to Public Policy (Formerly 46.105)	An introductory survey of the major forces and processes involved in the development of public policy; contemporary issues in public policy will also be considered.	Related	Course relates to the social dynamics of sustainability.
UGRD	POLI	2120	Political Science	College of Fine Arts, Humanities and Social Sciences	American Media and Politics (Formerly 46.212)	This course explores the role of the media in American politics and the role of politics in the American media. We focus first on the historical evolution of newspapers, radio, television, and the internet as vehicles of political news reporting. Next, we look at instances of journalistic bias and distortion in order to explore how corporate consolidation and commercial competition have affected the news industry. Finally, by studying a selection of major stories in depth, we will gain a better understanding of the factors involved in the conversion of political events and developments into seemingly significant news.	Related	Course incorporates the social aspects of sustainability by examining the relationship between the media, politics and the public.
UGRD	POLI	2350	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to the Law and Politics of Constitutional Development (Formerly 46.235)	An introductory study of constitutional law and politics; analysis of constitutional doctrine and the American constitutional system, with emphasis on contemporary controversies.	Related	Course incorporates the social aspects of sustainability by examining contemporary controversies by studying constitutional law and politics.
UGRD	POLI	2530	Political Science	College of Fine Arts, Humanities and Social Sciences	Introduction to Public Administration and Policy (Formerly 46.253)	An examination of the little studied fourth branch of government. Bureaucratic power in the American political system is reconsidered.	Related	Course relates the impact of public policy to individuals and the community.
UGRD	POLI	3040	Political Science	College of Fine Arts, Humanities and Social Sciences	Politics of Development (Formerly 46.304)	This course considers the politics of the global development process, the actors involved and the contexts within which development occurs.	Related	Course incorporates the social aspects of sustainability by examining the means to which development occurs within communities.
UGRD	POLI	3100	Political Science	College of Fine Arts, Humanities and Social Sciences	Isms' in American Politics (Formerly 46.310)	An examination of major ideological, philosophical and social currents.	Related	Course incorporates the social aspects of sustainability by examining social currents.
UGRD	POLI	3140	Political Science	College of Fine Arts, Humanities and Social Sciences	Parties and Interest Groups (Formerly 46.314)	An examination of party systems and coalitions in the US, their changing nature over time, the history of realignment, and the relationship of parties to interest groups.	Related	Course integrates the social aspects of sustainability by the relationship of parties to interest groups.
UGRD	POLI	3310	Political Science	College of Fine Arts, Humanities and Social Sciences	Animal Rights and Animal Welfare (Formerly 46.331)	This course examines how the structure of the human/non-human animal relationship affects of determines the nature of public policy formation on issues with impacts on non-human animals, both nationally and internationally.	Related	Course relates to the social dynamics of sustainability by examining animal rights.
UGRD	POLI	3400	Political Science	College of Fine Arts, Humanities and Social Sciences	American Politics And Law (Formerly 46.340)	Perspectives on American Politics and Law. Advanced study involving extensive reading, writing and discussion seeking understanding of the major transformations impacting contemporary American Society, Politics, Law, Economics and Culture; consideration of different interpretations of these changes, and the ways in which they are manifested in shifting political attitudes and coalitions, and new problems and conflicts.	Related	Course integrates the social and political aspects of sustainability by examining American politics, law and society.
UGRD	POLI	3410	Political Science	College of Fine Arts, Humanities and Social Sciences	Equal Rights (Formerly 46.341)	Advanced study in law and politics involving extensive reading, writing and discussion of the complex interrelationship between social change and the development of constitutional doctrine focusing upon the area of Equal Rights.	Related	Course integrates the social aspects of sustainability by examining the means to create equality.

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UGRD	POLI	3740	Political Science	College of Fine Arts, Humanities and Social Sciences	Democracy and Development (Formerly 46.374)	Explores the theories and experiences of countries newly converting to democracy in Asia, Africa, Latin America and the former Eastern Bloc. Also examines the strategies and prospects for development among the same countries.	Related	Course explores how newly democratic countries develop.
UGRD	POLI	3800	Political Science	College of Fine Arts, Humanities and Social Sciences	American Foreign Policy (Formerly 46.380)	A study of the processes of American foreign policy in the contemporary world.	Related	Course integrates the social aspects of sustainability by examining the relationship between the American government and nations around the world.
UGRD	POLI	3840	Political Science	College of Fine Arts, Humanities and Social Sciences	International Politics of Human Rights (Formerly 46.384)	This course will address the history, content, structure, law, and politics of international human rights. Using interactive participatory class format students will learn analytical and critical thinking skills as well as written and oral communication skills.	Related	Course integrates the social aspects of sustainability by examining human rights on a global scale.
UGRD	POLI	3950	Political Science	College of Fine Arts, Humanities and Social Sciences	International Law and Politics (Formerly 46.395)	This course will address the history, content, functioning and politics of International Law. It will deal with public law as it has developed throughout history and how it guides the politics of states and other actors in international relations.	Related	Course examines on the social dynamics of sustainability, specifically international organizations.
UGRD	POLI	3970	Political Science	College of Fine Arts, Humanities and Social Sciences	Seminar: Labor Law & Politics (Formerly 46.397)	Consideration of a variety of political, legal and social issues involving labor relations, unions, employment, and dispute resolution, and their place in American society.	Related	Course examines on the social dynamics of sustainability, specifically involving labor relations
UGRD	POLI	4110	Political Science	College of Fine Arts, Humanities and Social Sciences	Dynamics Power and Authority (Formerly 46.411)	This course surveys theories of power, authority, participation, and politics. Building on these theories, students will examine changing social, political, and economic patterns of inequality based on class, race (and related divisions of ethnicity, religion, caste, nationality), and gender. Reviews various approaches to altering these dynamics (business strategy, public policy, community and social movements). Cuts across units of firm, community, region, and nation, along with corresponding governmental institutions, and links theoretical analysis with study of practical problem solving. Instructor-initiated cases drawn from a variety of national experiences. Students will learn techniques of power analysis and prepare a power analysis project.	Related	Course integrates the social and political aspects of sustainability by examining the impact of power and authority.
UGRD	POLI	4900	Political Science	College of Fine Arts, Humanities and Social Sciences	War and Peace in the Sovereign State System (Formerly 46.490)	Despite much effort to limit the occurrence of interstate and intrastate war, such violence is still prevalent in the sovereign state system. This course will focus on the causes, dynamics, and outcomes of interstate and intrastate conflict and ways to sustain peace. We will examine the foundational works in the area of conflict before moving quickly into more recent research. The class will emphasize student participation and the application of concepts we learn in class. Students are asked to write a final paper exploring a concept of war and peace in the sovereign state system.	Related	Course incorporates the social aspects of sustainability by examining war and piece.
UGRD	POLI	3570	Political Science	College of Fine Arts, Humanities and Social Sciences	Thoreau in Our Time (Formerly 46.357)	This course traces Henry David Thoreau's influence on major social and political transformations in American history from the abolitionist movement to the present day. We will focus first on Thoreau's writings on slavery, commercial development, environmental history, and individual liberty. Then we will study his formative role in the civil rights and environmental movements of the twentieth century. Finally, through a mix of outside speakers and student presentations, we will explore how his writings continue to shape ongoing struggles to contend with climate change, advance social justice, and promote a greater sense of fairness in American life. The course will involve at least one trip to Walden Pond and a tour of Thoreau's birthplace in Concord, Massachusetts. Course page: http://faculty.uml.edu/sgallagher/Thoreau_in_Our_Time.html.	Related	Course offers an analysis of Thoreau's influence on social and political transformations in history and how his writings advanced environmental and social justice concepts.

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UGRD	POLI	4390	Political Science	College of Fine Arts, Humanities and Social Sciences	Justice and Trade in the Global Economy (Formerly 46.439)	We know that we are part of a global economy and that many of the things we buy and consume are produced in other countries. But what do we know of how they are made? Do we understand that there may be hidden costs in the price we pay for goods at the supermarket, in a department store? Understanding the nature of global trade is critical for us to be effective citizens in the world. Perhaps more important is that we understand how goods are produced and traded - what many think of as ""fair"" trade. The subject of Fair Trade isn't simply limited to the production and sale of coffee and chocolate. Fair Trade principles encompass environmental issues, human rights, and politics. Once aware of the ramifications of consumerism on all parts of the world, including the United States, people can make informed choices about the products they buy, the companies that employ them, and the political views they support. By the end of this course students should understand the major ideas and tools used to comprehend complex international and global trade relations. Students will understand the way in which goods are produced for global markets and the possible human and environmental costs such production entails.	Related	Course relates to the global economy and examines sustainability concepts such as "fair trade", environmental issues and human rights.
GRAD	PSYC	5000	Psychology	College of Fine Arts, Humanities and Social Sciences	Introduction to Community Social Psychology) (Formerly 47.500)	Introduces history and contemporary trends of community and social psychology with focus on how social and environmental forces affect individual and group quality of life. This couse surveys the history, theoretical frameworks, core values, methods/approaches and orienting concepts in the field.	Related	Course focuses on social and environmental factors that impact individuals and communities.
GRAD	PSYC	6650	Psychology	College of Fine Arts, Humanities and Social Sciences	Advanced Community Social Psychology (Formerly 47.665)	Introduces history and contemporary trends of community and social psychology with focus on how social and environmental forces affect individual and group quality of life. This course surveys the history, theoretical frame-works, core values, methods/approaches and orienting concepts in the field.	Related	Course focuses on the social dynamics of sustainability by examining how social and environmental forces affect quality of life.
GRAD	PSYC	6690	Psychology	College of Fine Arts, Humanities and Social Sciences	Advanced Applied Developmental Psychology (Formerly 47.669)	Provides a life span developmental perspective on individual and social and research, and illustrates the influences of environmental, social and cultural factors. Understanding the levels and tasks of development that characterize various ages helps us to understand the role of individuals as they interact in social contexts as well as the role of social contexts in the lives of individuals.	Related	Course focuses on the influences of environmental, social and cultural factors on life span development.
UGRD	PSYC	2550	Psychology	College of Fine Arts, Humanities and Social Sciences	Community Psychology (Formerly 47.255)	Surveys the nature and practice of community psychology, including principles of community organization and change as seen in such areas as education, mental health, the workplace, health care, justice system, corrections and social services. Students may participate in field research or practice under the direction of an assigned agency, and classroom work will include discussion of the field experiences of the participants.	Related	Course integrates the social aspects of sustainability by examining interactions between groups of people in various settings.
UGRD	PSYC	2090	Psychology	College of Fine Arts, Humanities and Social Sciences	Social Psychology (Formerly 47.209)	Presents an introduction to the study of social behavior in interpersonal relationships, groups, organizations, and the community: Diversity in regard to groups of peoples, cultures, and views is emphasized. Topics include non-verbal communication, social attraction, attitudes and attitude change, group dynamics, prejudice, labeling, stereotyping, interpersonal influence, and applications to social problems..	Related	Course focuses on social attributes contributed to sustainability.
UGRD	PSYC	3350	Psychology	College of Fine Arts, Humanities and Social Sciences	Psychology and Women (Formerly 47.335)	Considers such topics as: the psychology of sex differences; biological bases of psychological sex differences; the nature of female sexuality; clinical theory and practice concerning women; women as mental patients and mental health consumers; implications for psychology and for women's status.	Related	Class relates to social education regarding women related topics.
UGRD	PSYC	3360	Psychology	College of Fine Arts, Humanities and Social Sciences	Culture and Psychology (Formerly 47.336)	Provides an analysis to the impact of culture, socio-historical, and social influences on psychological processes and outcomes. Students will also learn about techniques for studying the influence of culture including cross-cultural methods and population-specific methods. Through careful analysis of research literature, this class will examine a variety of contexts within the U.S. and internationally. Topics will include identity development, immigration, acculturation, socialization, and social interactions among groups.	Related	Course explores the impact of culture and social influences on populations of people.

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UGRD	PSYC	4730	Psychology	College of Fine Arts, Humanities and Social Sciences	Seminar in Social Psychology (Formerly 47.473)	Presents an intensive study of one or more of the following special topics in social psychology: small group interaction; social aspects of health and illness; conformity; attitude formation and prejudice; patterns of communication, including nonverbal communication; psychology of sex roles; methods of social action and social change in the community.	Related	Course examines the social aspects of health and illness.
UGRD	PSYC	3600	Psychology	College of Fine Arts, Humanities and Social Sciences	Adult Development and Aging (Formerly 47.360)	Begins with an overview of recent theoretical perspectives on adult development and aging. In chronological sequence, it presents the stages of adulthood and concludes with death and dying. Topics covered include personal, family, and vocational development through adulthood, gender pattern differences, and the impact of changing demographics, including the lengthening of the life span.	Related	Course integrates social and developmental aspects of sustainability.
GRAD	PUBH	6150	Public Health	College of Health Sciences	Solutions for Work Environment Hazards (Formerly 19.615)	Techniques for controlling exposure to airborne contaminants. Basic controls include substitution, ventilation, isolation, administrative controls, and personal protective equipment. Special focus is placed on Toxic Use Reduction (TUR) and Pollution Prevention strategies.	Related	Course explores solutions related to a hazardous work environment specifically associated with airborne contaminants and incorporates the health aspects of sustainability.
UGRD	PUBH	3030	Public Health	College of Health Sciences	Social Determinants of Health (Formerly 31.303)	This course introduces students to the concept of social determinants of health, and strongly emphasizes the influence of social power relations on public health. An examination of a set of major health issues, at both the international and national levels provides the framework for students to learn and understand these concepts. A set of learning modules begins with identifying major contemporary health problems,definitions of health and health promotion as established through the World Health organization, and an exploration of social power relations and how they can shape public health. The course then moves to examine a set of specific health issues to see how they have been shaped by their social determinants. Juniors only.	Related	Class focuses on the social, environmental, and economic factors related to social health.
UGRD	PUBH	3040	Public Health	College of Health Sciences	Politics of Health (Formerly 31.304)	The course addresses a range of contemporary health problems (primarily in the U.S.) that are described and analyzed in their social context. Areas for consideration will include: political, economic, scientific/technological, environmental, and cultural factors. Students will be introduced to health education theories and methods that support the development of strategies for social change. Juniors only.	Related	Course focuses on the dynamics between the issues in both politics and public health.
GRAD	RADI	5220	Radiological Sciences	Kennedy College of Sciences	Environmental Radiation and Nuclear Site Criteria (Formerly 98.522)	This course provides an overview of the sources, distribution, environmental transport, dose projections, and environmental impact of radiations associated with the nuclear fuel cycle.	Related	Course focuses on the environmental transport and impact of radiation.
GRAD	CRIM	6620	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Global Issues and Human Rights and Justice (Formerly CRIM 662)	This course examines the impact of global issues on crime and justice and the intersection of social control and human rights approaches to crime. The course interweaves readings, lectures and discussion of justice and law; security and safety; socio-economic development; and comparative cultures and institutions in an examination of the impact of globalization, migration, labor exploitation, war and transnational agendas on the construction of crime, the development and control of criminal opportunity structures, and legal/ justice system responses. It examines the complex interactions between global context, human rights and social control approaches to crime. Topics include human trafficking; children and war; refugees and migration; and transnational crime in a global economy.	Related	Course examines the human rights aspect of sustainability in a global context.
UGRD	CRIM	3600	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Gender, Race, and Crime (Formerly 44.360)	This course examines gender and racial implications of criminal laws, criminal justice practices and programs will be examined. The position of women and racial/ethnic minorities will be assessed from the different perspectives of victims, offenders, and criminal justice practitioners.	Related	Course relates social interactions and implications to the social dynamics of sustainability.

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UGRD	CRIM	3120	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Security Management (Formerly 44.312)	Addresses the basic interdisciplinary principles of security management including planning, budgeting, organizing, staffing, directing, and controlling. This course will also cover marketing security services to management, risk management, civil and criminal liability, and labor relations. Each aspect of the course is designed to prepare security managers to face the new challenges as broader and more cost-effective protection is required with fewer resources. The course will also bring about greater awareness and understanding of the various options available in security and loss control. It will identify a number of risk areas and outline various deterrent and preventative methods.	Related	Course explores the dynamics of security management as a way to promote sustainability.
UGRD	CRIM	3480	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Advanced Seminar on Weapons of Mass Destruction and Terrorism (Formerly 44.348)	This course will examine the scientific and technological details of chemical, biological, radiological and nuclear (CBRN) weapons; the proliferation of these weapons and international CBRN prevention efforts (like the Nuclear Nonproliferation Treaty, the Chemical Weapons Convention, and the Biological Weapons Convention); and the treat of terrorist groups seeking to acquire and use CBRN weapons, and explore ways to improve our response to this complex threat.	Related	Course integrates global and social aspects of sustainability via background and nature of international events, conduct of the human population, and international policy.
UGRD	CRIM	3270	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Violence in America (Formerly 44.327)	This course provides students with an in-depth analysis of the courses, context, and control of a wide range of violent crimes.	Related	Course relates to the social aspects of sustainability and human behavior.
UGRD	CRIM	3950	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Statistics in Criminal Justice (Formerly 44.395)	This course is an extension of concepts learned in 44.390 (Introduction to Criminal Justice Research Methods). Statistics will be utilized as a mathematical language for interpreting the interrelation of social forces impacting criminality and deviance. The course will focus on how various statistics are calculated, but more importantly, the meaning of these figures for criminal justice scholars and practitioners will be discussed.	Related	Course integrates the social aspects of sustainability by examining social forces impacting criminality and deviance.
UGRD	CRIM	3260	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Hate Crime (Formerly 44.326)	This course examines prejudice as a motivation for criminal behavior. The criminological theory for hate crime is reviewed, as well as historical perspectives of this crime category.	Related	Course relates to the social aspects of sustainability and human behavior.
UGRD	CRIM	2480	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Terrorism (international and domestic) (Formerly 44.248)	This course acquaints the Criminal Justice student with the concept of terrorism at both the international and domestic levels. Topics include the history of terrorism, terrorism today and terrorism in the future. Counter measures taken to respond to terrorist threats are also examined.	Related	Course relates the impacts of terrorism to the elements of sustainable practices.
UGRD	CRIM	2130	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Emergency Management (Formerly 44.213)	The purpose of this course is to introduce the student to the various ways in which a corporation and local municipality can plan for a disaster before it occurs. Topics covered include risk identification and assessment of multi-hazards whether natural and man-made, violence in the workplace, development of crisis and disaster incident management programs, and business/agency continuation planning.	Related	Course relates to the economic and socio-economic relationship with Emergency Management.
UGRD	CRIM	3470	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Police Innovations (Formerly 44.347)	This course is concerned with contemporary efforts to change police agencies, particularly in the United States. Contemporary reform revolves mainly around what we now know as ""community policing"" and this course will dwell at some length on these initiatives. Other innovations, some of which may complement community policing, and all of which are narrower in scope, are also considered.	Related	Course integrates the political, social and economic dynamics of sustainability through exploring community policing.
UGRD	CRIM	3500	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Institutional Correction (Formerly 44.350)	This course provides an in-depth examination of the history, function, structure, and operation of American adult and juvenile correctional institutions.	Related	
UGRD	CRIM	3230	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	White Collar and Elite Deviance (Formerly 44.323)	This course will provide an overview of white collar crime including white collar, corporate, occupational, workplace, and organized crime.	Related	Course relates to the social aspects of sustainability by incorporating socio-economic issues in crime.
UGRD	CRIM	3510	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Community -Based Corrections (Formerly 44.351)	A comprehensive review of community-based sanctions and community-based, early-release mechanisms. In addition to traditional probation and parole reviews, ""new"" intermediate sanctions such as electronic monitoring, intensive supervision, boot camps, day fines, day reporting centers, and community service sentences.	Related	

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UGRD	CRIM	1150	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Introduction to Homeland Security (Formerly 44.115)	This course will encompass the study and relationship between those entities and institutions necessary for the protection of the United States. Course instructional material will examine the components of Federal, State and Local Police Agencies, as well as the role of Private Security and Emergency Responders needed to facilitate the implementation of the Homeland Security Act. Particular attention will be focused on Policy, Plans and Procedures at governmental and community levels.	Related	Course relates to the political, social and economic dynamics of Homeland Security protection, its policies and logistics.
UGRD	CRIM	2140	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Security Management (Formerly 44.214)	Addresses the basic interdisciplinary principles of security management including planning, budgeting, organizing, staffing, directing, and controlling. This course will also cover marketing security services to management, risk management, civil and criminal liability, and labor relations. Each aspect of the course is designed to prepare security managers to face the new challenges as broader and more cost-effective protection is required with fewer resources. The course will also bring about greater awareness and understanding of the various options available in security and loss control. It will identify a number of risk areas and outline various deterrent and preventative methods.	Related	Course relates to the economic and socio-economic relationship with Emergency Management.
UGRD	CRIM	2350	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Introduction to the Law and Politics of Constitutional Development (Formerly 44.235)	A course examining American constitutional doctrine as it has developed historically through the process of constitutional adjudication.	Related	Course relates to the social dynamics of sustainability.
UGRD	CRIM	2370	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Introduction to the Law and Politics of Civil Liberties (Formerly 44.237		Related	Course relates to the social dynamics of sustainability.
UGRD	CRIM	3400	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Criminal Networks (Formerly 44.340)	This course examines various forms of decentralized criminal networks and activities, both domestic and international, with particular focus on trafficking in drugs, weapons, counterfeit goods and humans. Students will study money laundering and the intersections of terrorist and criminal networks, as well as the challenges faced by law enforcement in responding to these activities.	Related	Course relates to the social aspects of sustainability and examines human trafficking, terrorism, policy and enforcement.
UGRD	CRIM	3460	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Critical Infrastructure Protection (Formerly CRIM 346)	This course provides an overview on critical infrastructure and the protection. The course will cover the concept and components of the country's critical assets and threat environment; federal government plans and how public-private partnership protection efforts are leveraged; and strategies and methods of protecting critical infrastructure.	Related	Course examines the relationship between maintain a solid infrastructure to ensure sustainable practices.
UGRD	CRIM	3490	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Intelligence & National Security (Formerly 44.349)	This course is designed to provide students with an understanding of how the U.S. intelligence community functions, where it fits in the policy making and law enforcement systems of U.S. democracy, and its role in the protection of national security.	Related	Course integrates the political, social and economic dynamics of sustainability through exploring U.S. Intelligence community functions and law enforcement.
UGRD	CRIM	3650	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	Hate Crimes (Formerly 44.365)	Hate crimes illustrate bigotry plus criminal acts. This course examines prejudice as a motivation for criminal behavior. The criminological theory for hate crime is reviewed, as well as historical perspectives of this crime category. This is a rich and comprehensive exploration that begins with understanding the psychology of prejudice and ends with reviewing genocide as a mass hate crime.	Related	Course integrates the social aspects of sustainability by examining bigotry and genocide.
UGRD	CRIM	4180	School of Criminology & Justice Studies	College of Fine Arts, Humanities and Social Sciences	American Courts and Judicial Process (Formerly CRIM.418)	This course will study the organization of and the processes employed by American Courts in an intensive participation format. Traditional text lessons on the U.S. Court system will be supplemented by simulations and mock trial problems. Using this two track approach, students will learn about the courts and simultaneously develop the analytical, critical reasoning and public speaking skills used in the Judicial system.	Related	Course relates the judicial system to the social health and welfare of the American people.
GRAD	NURS	5520	School of Nursing	College of Health Sciences	Social, Cultural and Policy Issues in Health Care (Formerly 33.552)	This course links health and illness to other central domains of life: gender, kinship, and culture within the context of the family, community and the current health care system. It draws on concepts from the social, health, and policy sciences to critically examine factors relating to health and health-seeking behaviors across the life course. Ethical dimensions of health policy formation and implementation are analyzed.	Related	Course relates to the social and cultural aspects of sustainability to health care policy.
UGRD	NURS	3140	School of Nursing	College of Health Sciences	Health Promotion Risk Reduction Families II (Formerly 33.314)	This course focuses on health promotion and risk reduction with adults and their families who are responding to potential or actual biopsychosocial health problems. Content is centered on holistic nursing care throughout the adult lifespan.	Related	Course integrates health and social aspects of sustainability.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	NURS	3240	School of Nursing	College of Health Sciences	Community-Focused Project Implementation (Formerly 33.324)	This course focuses on improving the health of one aspect of the community. Students analyze health problems in identified communities. Interventions for community as client are developed and implemented and the effectiveness of applied interventions in evaluated.	Related	Course identifies community health problems and provides solutions to these problems.
UGRD	NURS	3250	School of Nursing	College of Health Sciences	Community-Focused Project Dissemination (Formerly 33.325)	This one credit course focuses on the dissemination of the results of a community based program. Students develop presentations which describe methods used to identify, intervene and evaluate the health problems of a community. Students are required to present their findings at a formal dissemination venue identified by faculty.	Related	Course focuses on the results of identifying and solving community health problems.
UGRD	NURS	3100	School of Nursing	College of Health Sciences	Health Promotion Risk Reduction Families I (Formerly 33.310)	This course focuses on health promotion and risk reduction with young individuals and families who are responding to potential or actual physical and psychosocial health problems. Content is centered on holistic nursing care from a lifespan perspective beginning in pregnancy and ending with adolescence.	Related	Course integrates health and social aspects of sustainability.
UGRD	NURS	4120	School of Nursing	College of Health Sciences	Community Health and Health Policy (Formerly 33.412)	This course analyzes the development of policy and its impact on the health of populations. Students apply epidemiology and community health science to population-based nursing practice. Students identify a community health problem that can be addressed through health promotion activities.	Related	Course integrates the health aspect of sustainability by analyzing health care policy and its impact on the health of populations.
UGRD	NURS	3080	School of Nursing	College of Health Sciences	Health Promotion in Nursing (Formerly 33.308)	This course is designed as a transition course for registered nurse students pursuing a baccalaureate degree with a major in nursing. It introduces the theory and research related to the concepts of health/ promotion and risk reduction. These concepts are presented as essential components of professional nursing practice. This course includes a clinical practicum which focuses on the development of interventions to promote the health of individuals and families. This course aims to refine critical thinking skills and analyze nursing's unique contribution to health care. Consideration is given to the interrelationships of theory, research and practice.	Related	Course integrates health and social aspects of sustainability.
UGRD	SOCI	2560	Sociology	College of Fine Arts, Humanities and Social Sciences	Political Sociology (Formerly 48.256)	Focuses on the development and use of power in modern society. Emphasis is placed on the relationship of American political institutions to economic institutions, to social class, and to supporting ideologies.	Related	Course examines the relationship between society and the institutions that create authority.
UGRD	SOCI	3170	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of Genocide (Formerly 48.317)	The deliberate destruction of an ethnic group is an historical event and a social process. This course addresses such questions as: Why do genocides occur? Why do people become genocide perpetrators? How do genocides affect survivors and their offspring? How can genocide be prevented? Focus is on Native American, Armenian and Jewish experiences and recent cases of ethnic cleansing.	Related	Course focuses on the human rights perspective of sustainability and its causes/effects.
UGRD	SOCI	1020	Sociology	College of Fine Arts, Humanities and Social Sciences	Social Anthropology (Formerly 48.102)	Using the comparative approach to society, this course examines several distinct cultures as a means of understanding both the universal constants and the variations in human societies.	Related	Course examines sustainable dynamics that influence societies.
UGRD	SOCI	3030	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of American Education (Formerly 48.303)	Course introduces students to ongoing debates in the field of Sociology regarding the American educational system, its structures and functions and how it relates to issues of inequality by race, class and gender. Students are expected to explore, examine and evaluate the current issues relating to the system of education in the United States.	Related	Course explores the functions and issues regarding the U.S educational system through a socio-economic lense.
UGRD	SOCI	2400	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of Gender (Formerly 48.240)	This course is an interdisciplinary introduction to the field of gender studies. A variety of topics are presented, such as gender stratification, work and family, sexual identities, media representations of women and men, women's movement, and violence against women. Feminist theories and methods are also introduced.	Related	Course focuses on gender as a social dynamic of sustainability.
UGRD	SOCI	2340	Sociology	College of Fine Arts, Humanities and Social Sciences	Race and Ethnicity (Formerly 48.234)	This course locates and studies the sociological dynamics of race and ethnic relations in the United States as it pertains to all groups. The course material presents theories and models that explain periods of conflict and cooperation between diverse sets of people. While providing some historical background, the course focuses primarily on recent and contemporary situations.	Related	Course explores the relationship between races incorporating the social aspects of sustainability.
UGRD	SOCI	2160	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of War and Peace (Formerly 48.216)	The purpose of this course is to examine critically the social forces that contribute to war, war's social consequences, and the possibilities for creating a more peaceful world.	Related	Course examines the relationship between social interactions and war.

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UGRD	SOCI	2120	Sociology	College of Fine Arts, Humanities and Social Sciences	Cultures of the World (Formerly 48.212)	Focuses on a different country or region each time it is given. Students examine the traditional culture, recent history, economic development, class structure, and international relations of the area covered.	Related	Course examines the socio-economic dynamics of cultures around the world.
UGRD	SOCI	3450	Sociology	College of Fine Arts, Humanities and Social Sciences	Urban Sociology (Formerly 48.345)	Deals with issues related to the quality of life in American cities. Students taking this course may engage in research projects on the city of Lowell and the role of the University of Massachusetts Lowell within that city.	Related	Course focuses on societal issues within the urban community.
UGRD	SOCI	2450	Sociology	College of Fine Arts, Humanities and Social Sciences	Introduction to Labor Studies (Formerly 48.245)	This foundational course has two overarching learning objectives: (1) to give students basic empirical knowledge and analytical tools to understand the context of work in the United States at the dawn of the twenty-first century and (2) to give students an understanding of how labour unions work, what has been their impact historically, and what their role is in contemporary society. The course will be explicitly interdisciplinary, drawing on readings from history, sociology, economics, political science, and psychology to offer and introduction to understanding work and labor through and analytic lens. In addition, the course will include a service-learning component in collaboration with the UML Labor Education Program.	Related	Course focuses on labor relations between workers and the institution.
UGRD	SOCI	3510	Sociology	College of Fine Arts, Humanities and Social Sciences	The Sociology of Health and Health Care (Formerly 48.351)	With the passage of the Affordable Care Act, the U.S. Health Care system is undergoing a radical change as profound as any in U.S. history including those for minority and woman's rights. A large segment of the population has struggled to obtain even basic health care coverage. The changes taking place are analyzed in a historical and comparative context by examining health care in other countries. Special attention is given to understanding the professions in medicine and the role medical professions have had in shaping medical care. At the micro level, the course examines evolving health care provider/patient relationships to better understand the level of control patients can exert over their health care decisions.	Related	Course examines the changes occurring in the U.S Health Care systems over recent years and compares the current Health Care system to others around the world in a historical and social context.
UGRD	SOCI	1150	Sociology	College of Fine Arts, Humanities and Social Sciences	Social Problems (Formerly 48.115)	This entry level course uses the core concept of social problems to introduce basic social science reasoning-how social scientist define research questions, develop systematic methods to study them, gather evidence, search for pattern, in link findings to existent knowledge,. Cases provide opportunities to discuss how private problems develop into public issue, illustrating sociology as a discipline that evolves in response to social conflicts and inequalities. The course also meets General Education requirements for Ethics and Diversity.	Related	Course integrates social problems into a broader understanding of society.
UGRD	SOCI	3070	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of Immigration (Formerly 48.307)	The United States is frequently described as a country with a proud history of immigration. As a result, citizens and residents of the U.S. often identify their home as a nation of people who make up a melting pot country. While useful and insightful, the melting pot metaphor requires comparison with additional explanations of immigration and immigrant experiences. In order to provide deeper comprehension of the topic matter, this course offers sociological examination of immigration processes, laws, and debates. Three areas compose the main portion of class content: historical accounts and theories, legislation, and the social, economical, and political experiences of immigrants.	Related	Class relates to the social dynamics of sustainability, specifically diversity and equal opportunity in context to immigration.
UGRD	SOCI	3820	Sociology	College of Fine Arts, Humanities and Social Sciences	Social Movements (Formerly 48.382)	Considers organized action undertaken to alter the social position of a group. Organization, techniques of action, motivation of participants, and group ideologies are studied. Materials from historical, social, psychological, and sociological sources are used.	Related	Course relates the changes brought about by social movements.
UGRD	SOCI	2050	Sociology	College of Fine Arts, Humanities and Social Sciences	Public Sociology (Formerly 48.205)	Public sociology includes sociological initiatives targeting non-university audiences and serving the public good. This course will 1) introduce and critique the various conceptualizations of public sociology linking them to broad schools of sociological theory; 2) explore alternative field models and methods, preparing students for field projects in future semesters; and 3) expose students to sociological practitioners and practices compatible with the mission of the university and department. From a liberal arts perspective, the course stresses critical thinking and communication skills.	Related	Course relates the social dynamic of sustainability.

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UGRD	SOCI	2150	Sociology	College of Fine Arts, Humanities and Social Sciences	Peacemaking Alternatives (Formerly 48.215)	Examines various positive alternatives to war and violence, including disarmament, nonviolence, conflict resolution, and the United Nations. Students do volunteer work with an activist agency or interview an activist. The course stresses the historical and contemporary role of peace movements and allied social-change movements such as feminism, civil rights and environmentalism.	Related	Course examines the dynamics that lead to peace between groups of people by incorporating the social aspects of sustainability.
UGRD	SOCI	2700	Sociology	College of Fine Arts, Humanities and Social Sciences	Self and Society (Formerly 48.270)	An examination of the relationship between individuals and the social world around them. The course examines the underlying structures that pattern human interaction. Topics include the social construction of the self, the construction of social reality, and the sociology of emotions, among others.	Related	Course examines the influences between individuals and society.
UGRD	SOCI	3100	Sociology	College of Fine Arts, Humanities and Social Sciences	Ethnicity in Massachusetts (Formerly 48.310)	This is an interdisciplinary, distance learning course devoted to understanding specific ethnic groups in Massachusetts, their histories and cultures, and the economic and political realities of their lives as defined by themselves and others. Different groups are studies each year. Groups such as African American, Puerto Rican, Cambodian, Vietnamese, Wampanoag and Mi'skmag will be examined in relation to the topics listed above.	Related	Course examines the different cultures and ethnicities in Massachusetts and the interactions between them.
UGRD	SOCI	3110	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociological Perspective on Communication & Social Change (Last Term Fall 2014) (Formerly 48.311)	Most social interactions and interventions involve communication. Thus, communication patterns present critical issues for sociological inquiry. This course introduces communication as a central yet often ignored element of social life. It surveys existing communication theories, then focuses on models used by marginalized populations in efforts to democratize communication systems. Finally, it introduces tools for communication strategizing. As a final product students will conduct a frame analysis of a current social topic. From a general liberal arts perspective, the course will stress critical thinking and writing skills.	Related	Course relates to the social dynamics of sustainability by examining social change. We also undertake a social learning project. At least one option is climate related. This Fall, we will be helping to design a communication plan for the climate change teach-in and to carry out that plan. Additionally the course includes a unit on propaganda and the mis-representation of climate scientists' research.
UGRD	SOCI	3160	Sociology	College of Fine Arts, Humanities and Social Sciences	Youth and Society (Formerly 48.316)	Youth (or adolescence) constitutes a historically and socially constructed stage of the life course between childhood and adulthood. Since the early twentieth century, society's view of this life period has been ambivalent, at once glorifying the age of youth while also fretting over the problems that youth face. This course takes a sociological view of the study of youth/adolescence with particular attention to: (1) how this stage of the life course intersects with race, gender, immigration status and sexuality; (2) how society has responded to youth over time through a range of youth-serving organizations and media representations; and (3) how youth have responded as agents in their own public representations and development.	Related	Course explores the social changes that comes about between generations.
UGRD	SOCI	3610	Sociology	College of Fine Arts, Humanities and Social Sciences	Sociology of Law (Formerly 48.361)	The course examines the role of social forces in defining the law. Topics include the legal profession, white-collar crime, and the importance of race, class and gender in the criminal justice system.	Related	Course examines the social forces defining law including race, class and gender.
UGRD	SOCI	3620	Sociology	College of Fine Arts, Humanities and Social Sciences	Social Welfare Policy (Formerly 48.362)	The course examines the development of social welfare policy in the United States as well as alternative strategies for social welfare provision. Particular attention is paid to the role of race/ethnicity, class, and gender in the formation of social welfare policy.	Related	Course examines the social health of people with a focus on race/ethnicity, class and gender.
GRAD	PUBH	6030	Work Environment	College of Health Sciences	Global Development and Health (Formerly PUBH.603)	This course discusses global health efforts in relationship to human health and quality of life. Using a case methodology, this course will enable students to analyze complex health and development challenges in the less-developed world, and propose and evaluate interventions that address challenges. Topics include maternal and child health, nutrition, infectious and noninfectious diseases, natural disasters, sanitation and health inequality. Access to health care in developing and developed countries will be analyzed. The concept of positive deviance will also be explored	Related	Course explores global health to quality of life.
GRAD	PUBH	6220	Work Environment	College of Health Sciences	Biomarkers in Occupations and Environment (Formerly 19.622)		Related	Biomarkers are a critical compnent of environmental monitoring programs.

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GRAD	PUBH	6270	Work Environment	College of Health Sciences	Socioeconomic Inequalities in Health (Formerly 32.627)	The course explores the relationship between social and economic justice and public health. Focusing primarily on the U.S., the forces that either establish and exacerbate or prevent socioeconomic inequities will be analyzed to understand the intricate links between social, behavioral, physical, and biological determinants of health. Several theoretical orientations will be reviewed in order to better understand how each frames research and public health strategies that have been used to address health inequalities. Students will be able to competently articulate the relationships between social and health inequalities. They will be able to explain the strengths and limitations of different theoretical orientations to these issues and frame the policy needs to positively reduce health disparities.	Related	Course relates different socio-economic classes to the current health care system.
GRAD	PUBH	6580	Work Environment	College of Health Sciences	Clean Product Design (Formerly 19.658)	This advanced seminar will provide an introduction to clean product design and management which includes the use of lifecycle thinking, eco-design concepts, materials analysis, inherent product safety, recycling and reuse, produce take back, and design for the environment. As background, the seminar will cover renewable resources, bio-based materials and green chemistry solutions and conclude with a consideration of new forms of sustainable consumption.	Related	Course focuses on renewable resources used in product design.
GRAD	PUBH	6590	Work Environment	College of Health Sciences	Cleaner Production (Formerly 19.659)	This course will explore the rapidly expanding developments in cleaner production methods and policies. The course will focus on new directions in environmentally conscious manufacturing and product design in Europe. The subject will cover topics ranging from European demonstration projects, environmental auditing, cleaner technology assessment, eco-efficiency models, water and energy conservation, sustainable product design, eco-design and life cycle assessment, product take-back and extended product life, full cost accounting, industrial ecology, environmental management systems and ISO 14000. Special emphasis will be given to new information data sources and an introduction to new cleaner production methods software.	Related	Course focuses on development, design, manufacturing and production of environmentally friendly cleaning methods and policies.
GRAD	PUBH	6720	Work Environment	College of Health Sciences	Socioeconomic Inequalities and Health (Formerly 32.672)	The course explores the relationship between social and economic justice and public health. Focusing primarily on the U.S., the forces that either establish and exacerbate or prevent social inequities will be analyzed to understand the intricate links between social, behavioral, physical, and biological determinants of health. Several theoretical orientations will be reviewed in order to better understand how each frames research and public health strategies that have been used to address health inequalities. Students will be able to competently articulate the relationships between social and health inequalities. They will be able to explain the strengths and limitations of different theoretical orientations to these issues and frame the policy needs to positively reduce health disparities. Permission of instructor.	Related	Course relates health issues to the socio-economic status of a population.
GRAD	PUBH	6737	Work Environment	College of Health Sciences	Global Aging and Health (Formerly PUBH 681)	This course will provide an overview of the relevance of global aging to public health in high-income, emerging economies, and low -income countries. The course will examine the global perspective of public policy issues related to the aging of the world population. Topics include: demographic trends, global burden of disease, health systems design and caregiving models, social insurance programs, age-friendly cities, cross-cultural perspectives on aging, social change and aging, and public policy responses driven by a global aging population.	Related	Course focuses on global aging and public health incorporating the health and social aspects of sustainability.
UGRD	PUBH	2210	Work Environment	College of Health Sciences	Health Policy (Formerly PUBH.221)	This introductory course will provide students with an overview of the healthcare systems that are currently utilized to provide coverage to Americans with emphasis on existing disparities. Students will also review policies that are developed and implemented to enhance the current health care system. An analysis of how healthcare coverage and costs differs between the US and other developed nations will also be covered in this course.	Related	Course provides an overview of the health care systems in the United States.
UGRD	PUBH	3210	Work Environment	College of Health Sciences	Health Care Systems (Formerly 31.321)	This course describes and analyzes the nature and functions of health care services and health professionals. The course examines the impact of social, political, economic, ethical, professional, legal, and technological forces on them and the system they comprise. Juniors and Seniors only.	Related	Course integrates the economic and social aspects of sustainability in regard to the functions of health care services.

CAREER	SUBJECT	CATALO	Program/Department	School	COURSE_TITLE	COURSE_DESCRIPTION	Focus/Related	Reasoning
UGRD	PUBH	3310	Work Environment	College of Health Sciences	Occupational Health and Safety I (Formerly PUBH.331)	This is the first semester of a two-semester undergraduate course sequence that provides an overview of the field of occupational health and safety. This course focuses on safety and ergonomics. The identification and control of hazards in the workplace and the safety of consumer products will be explored. Students will discuss the detection and reduction of hazards in the workplace to prevent negative impacts on health.	Related	Course examines regulations and safety issues within the workplace.
UGRD	PUBH	3320	Work Environment	College of Health Sciences	Occupational Health and Safety II (Formerly PUBH.332)	This is the second semester of a two-semester undergraduate course that provides an overview of the field of occupational health and safety. This course focuses on occupational hygiene and includes the recognition and evaluation of health hazards, and the control of health hazards including the use of protective equipment and ventilation systems. A laboratory for the course (PUBH333) allows the student to apply course content in the laboratory setting	Related	Course examines the regulations and safety issues within the workplace.
UGRD	PUBH	3710	Work Environment	College of Health Sciences	Chemicals and Health (Formerly 31.371)	Provides a broad overview of how the design, manufacture, use and disposal of chemicals and chemical products affect health and ecosystems. Provides an in-depth overview of how chemicals are monitored in the environment (including biomonitoring), how their risks are characterized, and the prevention of chemical risks through safer chemical design.	Related	Course focuses on the impact of the chemicals in our food associated with human health and the environment.
UGRD	WLFR	3200	World Languages/French	College of Fine Arts, Humanities and Social Sciences	Contemporary French Civilization and Culture (Formerly 50.320)	In this course we look closely at some fundamental issues reflecting the rapidly changing paramters of French culture and society today; the question of national identity and cultural hybridite, the relationship between the evolving types of family relations and new forms of social and political contracts; the crucial personal problems faced by the young, the poor, the immigrant and the elderly in an increasingly multicultural Hexagone attempting to define its place, role and function within the recently defined Europe unit and the new global world order; the current status of women; the relaionship between cities and ghettos, violence and crime; the nature of emerging forms of cultural production within new trends and styles of modernite.	Related	Course incorporates the social aspects of sustainability by examining French culture and society.
UGRD	WLFR	3760	World Languages/French	College of Fine Arts, Humanities and Social Sciences	French Cinema & Society (Formerly 50.376)	Covers the dramatic presentation French society gives of itself during the period of profound social and economic change, from the New Wave and the May 68 events to today's younger generation facing an uncertain tomorrow. Each screening (in French with subtitles) is preceded by an introduction placing the film in its historical context in English.	Related	Course incorporates the social aspects of sustainability by examining French society during social and economic change.
UGRD	WLKH	2100	World Languages/Khmer	College of Fine Arts, Humanities and Social Sciences	Introduction to Cambodian Culture (Formerly 59.210)	This course focuses on the development of Southeast Asian art and culture from ancient times to the present. As a diverse region that is home to Muslims, Catholics and other Christians, Buddhists,Hindus and animists, examining arts and culture in Southeast Asia provides fascinating insight into the region's societies. This course examines performance, architecture and material culture from a variety of Southeast Asia, its contacts with neighboring regions, and the breadth of societies in the region and their motivation for creating art. Students will be introduced to theater, dance puppetry, martial arts and music of Southeast Asia. We will examine artistic forms influenced by ancient Hindus, Chinese, Arabs, Europeans during the colonial era, and other influences on the arts in Southeast Asia. Students will also explore how various art forms have political, social and religious functions in such regions as Thailand Indonesia (Bali and Java). Vietnam and Cambodia.	Related	Course relates to the social aspects of sustainability, specifically the southeast region of Asia.
UGRD	WLKH	3490	World Languages/Khmer	College of Fine Arts, Humanities and Social Sciences	Literature, Politics and Genocide in Cambodia (Formerly 59.349)	This course will examine various literary and political responses to the Cambodian genocide, particularly personal accounts or literary testimony by survivors and government sanctioned legal proceedings. The course will consider how the literary and political responses to the Cambodian genocide have at different times paralleled, complimented and opposed each other. The course will also ask whether their overall effect contributes to or detracts from the serving of justice and the process of healing for the survivors. To pursue these questions, we will read selections from novels and poetry written by Cambodian survivors side by side with accounts of political activities of the Cambodian government and the international community to bring the perpetrators of the genocide to justice.	Related	Course focuses on the response to the Cambodian genocide through a political and social point of view.

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UGRD	WLSP	3150	World Languages/Spanish	College of Fine Arts, Humanities and Social Sciences	Latin American Civilization and Culture (Formerly 54.315)	Considers significant intellectual, artistic, historical, and sociopolitical aspects of Latin America from the beginning of its history. Through audiovisual aids and selected readings, the student will explore the Latin American way of being and expressing.	Related	Course includes a cultural and social understanding of Latin America.
UGRD	WLSP	3520	World Languages/Spanish	College of Fine Arts, Humanities and Social Sciences	Hispanic Perspectives (Formerly 54.352)	In this course we will explore some of the foundational texts of Hispanic literature while discussing the intersections of political, literary, and cultural traditions that connect the United States with Spain and Latin America.	Related	Course integrates the social aspects of sustainability by understanding cultural traditions.
GRAD	IM	630	#N/A	#N/A	Biological Oceanography		Related	Course integrates environmental aspects of sustainability as they relate to marine ecosystems.
GRAD	IM	650	#N/A	#N/A	Physical Oceanography		Related	Course integrates environmental aspects of sustainability as they relate to marine ecosystems.
GRAD	57	520	#N/A	#N/A	Inequality and Organization	Despite the lowest unemployment rate in 25 years, the economic recovery of the 1990s has brought a Treadmill Economy running faster with minimal gain. With low productivity growth, surprisingly little growth in wages and a long-term slowdown in economic growth since the 1970s, the United States continues to experience increasing inequality. What forces are at work shaping these trends and can they be modified or reversed on the local, state and regional levels? How have these trends both shaped and been influenced by social and business policies concerning poverty and welfare, local and urban development, technology and economic development, changes in work organization and labor-management relations, domestic investment and international competition? This seminar course will bring local and national experts on these issues to present their findings and discuss their view of future prospects for local and regional social and economic development policy.	Related	Class integrates the socio-economic factors of sustainability, with a focus on economic inequality.
UGRD	WLSO	2400	#N/A	#N/A	Introduction to Labor Studies (Formerly WLS 240)	This foundational course has two overarching learning objectives: (1) to give students basic empirical knowledge and analytical tools to understand the context of work in the United States at the dawn of the twenty-first century and (2) to give students an understanding of how labour unions work, what has been their impact historically, and what their role is in contemporary society. The course will be explicitly interdisciplinary, drawing on readings from history, sociology, economics, political science, and psychology to offer and introduction to understanding work and labor through and analytic lens. In addition, the course will include a service-learning component in collaboration with the UML Labor Education Program.	Related	Course examines Labor Unions and their role in American society.
UGRD	MKTG	4960		Manning School of Business	Marketing for Nonprofits (Formerly MKTG 496 / 62.496)	Topics of current interest in Marketing. Subject matter to be announced in advance.	Related	
UGRD	ROTC	4500	Army ROTC	0	Leadership in a Complex World (MSL 402) (Formerly 28.450)	Leadership in a Complex World explores the dynamics of leading in the complex situations of current military operations in the contemporary operating environment (COE). Students will examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. This course places significant emphasis on preparing students for their careers in the military. It uses various case studies and scenarios to prepare students to face the complex ethical and practical demands of leading as a commissioned officer in the United States Army.	Related	Course integrates the social aspects of sustainability by examining complex ethical issues as a commissio0ned U.S. Army officer.
UGRD	SOCI	4050	Sociology	College of Fine Arts, Humanities and Social Sciences	Feminist Methodologies (Formerly 48.405)	Despite the recent growth of feminist methodologies, there is no one way of doing feminist methodologies. The growing body of literature in this area addresses the distinctive challenges and strengths of doing this research. Gender Studies scholars especially seek to question the framing of a study, managing of emotions, and ethical dilemmas. We will explore feminist strategies for creating, implementing, and analyzing a project that is grounded in the everyday lives of people while situating them in a social, political, and economic context. We will explore the interdisciplinary intersections where these challenges push at the boundaries of the disciplines of your major field of study. We will also investigate how to use as variety of qualitative approaches while doing a feminist project and the ways in which feminism can enlighten understandings of ""traditional"" qualitative methods.	Related	Course examines ethical dilemmas and the social, political and economic contexts of feminism.