

**UMass Amherst Sustainability
Courses List 2015**

Undergraduate Courses

Code	Course Number	Department	Course Title	Focused/Related	Description
ANTHRO	208	Anthropology	Human Ecology	Focused	The study of human/environmental interactions. Emphasis on biological and cultural responses by contemporary human groups to pervasive environmental problems. Examples from mountains, grasslands, deserts, and tropical forests.
ARCH	497A	Architecture	Sustainable Building Systems	Focused	Students will engage in a process of research and analysis of sustainable, energy efficient, and cost-effective building systems, and ultimately construct the building they have designed.
ARCH	497B	Architecture	ST- Sustainable Design	Focused	This course provides an introduction to the principles of sustainable design, exploring emerging definitions, methods, debates and challenges of how designers address the built environment.
BCT	150	Environmental Conservation	The Built Environment	Focused	We will explore the issues of sustainability from the perspective of the built environment, our history of construction and expansion, and buildings and how they interact with the natural environment. Students will be exposed to issues of human impacts on natural systems through the built environment and the variety of disciplines that are working to create a more sustainable future.
BCT	211	Environmental Conservation	Energy Efficient Housing	Focused	Energy conservation in contemporary residential construction. Emphasis on: energy efficient building materials, products and construction technology; alternative energy sources; passive solar design; environmental concerns, regulatory issues and building codes.
BCT	353	Environmental Conservation	Business of Building	Focused	Introduces business concepts to students interested in design and fabrication of structures. Managing a project, contracts, marketing, scheduling, personnel, leadership, interpersonal communication, human behavior, finance, budgeting, ethical and legal considerations.
BCT	297EA	Environmental Conservation	ST-Energy Auditing	Focused	No description available
BCT	311	Environmental Conservation	Sustainable Indoor Environmental Systems	Focused	The focus of this course is to understand the fundamental principles behind the sustainable design and regulation of thermal comfort and mechanical, plumbing, and lighting systems in buildings.
BIOLOGY	287	Biology	Intro Ecology	Focused	The scope of ecology; how organisms cope with environmental challenges; population dynamics; species interactions of competition, predation, and mutualism; community ecology; biodiversity; biogeochemical cycles; selected topics in evolutionary and behavioral ecology. Basic concepts related to practical applications in harvesting, biological control, conservation, pollution, and global change.
CE-ENGIN	370	Civil and Environmental Engineering	Introduction to Environmental and Water Resources Engineering	Focused	Introduction to environmental engineering with a focus on physical, chemical, and biological principles. Topics include environmental standards and legislation, material balances, reaction kinetics, environmental chemistry and microbiology, biogeochemical cycles, water quality, water resources, air quality, and solid and hazardous wastes. With Lab.
COMM	494CI	Communication	Communication, Ecology, Sustainability	Focused	As forms of communication contribute to the growing integration of the planet, the planet itself is threatened by unprecedented environmental and economic crises. This course will examine ecology and sustainability through the mediating logic of communication technologies, institutions and texts, as well as insights drawn from fields like Anthropology, Geography, Biology, Physics, and Spirituality. Students will develop an interdisciplinary framework to examine conflicts over nature and the social construction of nature and ecology. We will apply key concepts to real world situations through reflection assignments, in class discussion, presentations, an exam, and a research project.
ECON	308	Economics	Political Economy of the Environment	Focused	Application of the theories of political economy to environmental problems and issues. Topics include regulatory and market approaches to pollution and natural resource depletion; cost-benefit analysis and its economic and political foundations; and case studies of specific environmental problems such as acid rain, deforestation, and global warming.
ENVIRDES	394A	Landscape Architecture and Regional Planning	S-Writing in Environmental Design and Landscape Architecture	Focused	Continuation of the writing skills developed in freshman writing with an emphasis on content and style appropriate to the environmental design and landscape architecture field.
ENVIRSCI	101	Environmental Science	Introduction to Environmental Science	Focused	Introduction to the biology of environmental pollution. Examples of air, water, and land degradation will be studied using case histories. Strategies to restore damaged ecosystems and current approaches to achieve sustainable environments will be discussed.
ENVIRSCI	213	Environmental Science	Introduction to Environmental Policy	Focused	An overview of the environmental policy process covering the roles of major players at community, state, and federal levels, and emphasizing the role of environmental science. Covers the major environmental laws and recent amendments, the role of policy analysis, and international environmental policy.
ENVIRSCI	214	Environmental Science	Ecosystems, Biodiversity, and Global Change	Focused	Conservation science is concerned with phenomena that affect the maintenance, loss, and restoration of Earth's animals, plants and ecosystem while balancing the needs of people. Using principles from ecology, population genetics, economics, political science, and other natural and social sciences, this course will examine the global changes causing widespread species extinctions via large-scale shifts in climate, habitat destruction and fragmentation, ocean acidification, overexploitation, and invasive species. We will also focus on the various conservation strategies used to conserve ecosystems and biodiversity.
ENVIRSCI	315	Environmental Science	Principles of Environmental Toxicology and Chemistry	Focused	Fundamental areas of environmental science presented in an integrated, interdisciplinary sequence: 1) environmental toxicology, 2) toxins in food and the environment, 3) environmental fate and degradation of toxicants. Prerequisites: ENVIRSCI 214 and organic chemistry.
ENVIRSCI	342	Environmental Science	Pesticides, the Environment, and Public Policy	Focused	Current issues associated with pesticide use; includes discussion of role of pesticides in agriculture, public health, and other related areas; fate of pesticides in the environment; and public perception of pesticides. Case studies examine benefits and risks of pesticide use; environmental cancer; and role of media and public interest groups in pesticide decisions. Alternatives to current heavy reliance on chemical technology in pest control. Current and pending federal, state, and local legislation.
ENVIRSCI	445	Environmental Science	Sustainability and Problem-Solving in Environmental Science	Focused	In the course you will seek practical solutions to complex environmental problems by crossing traditional disciplinary boundaries and using an inquiry, cooperative learning-based approach. You'll learn how to integrate and apply knowledge from the four core areas of the ENVIRSCI curriculum. The main learning goals for this course are to gain in-depth experience in identifying tools and planning solutions for environmental challenges, and to explore how integrating your diverse educational experiences leads to new levels of understanding. You will learn how to address environmental management problems caused by global change, pollution, and the unsustainable use of renewable and non-renewable resources. The semester culminates in team-based projects in which students investigate connections between current environmental issues, their education in your ENVIRSCI major and your experience as UMass undergraduates, with structured opportunities for reflection on both your discipline and on yourself as a life-long scholar. This course meets the Integrative Experience requirement for the BS-EnvSci majors.

ENVIRSCI	465	Environmental Science	Principles of Environmental Site Assessment	Focused	Training in the ASTM method for detecting recognized indicators of petroleum and hazardous material contamination at properties of concern to local communities. Phase I and II techniques including record file research, site reconnaissance, and subsurface investigations. Information obtained on project sites assembled into Phase I Environmental Site Assessment Reports for submission to interested municipalities.
ENVIRSCI	197D	Environmental Science	ST-Foundations of Sustainability	Focused	No description available
ENVIRSCI	297F	Environmental Science	ST-Environmental Communication EcoRepII	Focused	No description available
ENVIRSCI	390A	Environmental Science	Environmental Soil Science	Focused	Introduction to physical, chemical, and biological properties of soil with emphasis on environmental science and natural resource applications. Soil's natural role in biome structure, nutrient cycling, water purification, and carbon storage will be explored. Processes important to soil and groundwater pollution (subsurface movement, attenuation, and remediation) will be discussed. Special attention given to wetland soil processes and the identification of hydric soils in the landscape. Some out-of-class field exercises are required.
FOOD-SCI	160	Food Science	The Nature of Food	Focused	An introduction to the scientific nature of everyday foodstuffs. Examines the chemical composition and physical structure of foods. Also examines the properties of food components which affect appearance, color, flavor, texture and nutritional value. Changes during storage, cooking and processing are considered for their effect on quality.
GEOGRAPH	100	Geosciences	Global Environmental Change	Focused	The natural relationships between the atmosphere, hydrosphere, biosphere, and lithosphere; human impact on the natural environment. Global environmental issues: global warming, sea-level rise, and ozone depletion in the stratosphere. Global changes of the past also studied to give perspective to forecasted changes. Includes writing exercises.
GEOGRAPH	354	Geosciences	Climatology	Focused	Fundamentals of the earth/atmosphere energy balance, the hydrologic cycle, atmospheric motion, and the general circulation of the atmosphere. Regional and local climates. How climate affects people's activities and how people influence climate. Climate change, its causes, and its effects. Prerequisite: introductory course in weather and climate
GEOGRAPH	450	Geosciences	Indigenous Peoples and Conservation	Focused	Indigenous peoples' contributions to biodiversity conservation, issues raised by establishment of national parks on indigenous lands, and approaches linking conservation and rights. Global emphasis, with special attention to the Americas.
GEOGRAPH	497E	Geosciences	ST-Geography, Policy, and the Environment	Focused	No description available
GEOLOGY	105	Geosciences	Dynamic Earth	Focused	The earth is a dynamic planet, constantly creating oceans and mountain ranges, accompanied by earthquakes and volcanic eruptions. This course explores the ideas that led to the scientific revolution of plate tectonics; how plate tectonics provides a comprehensive theory explaining how and why volcanoes and earthquakes occur; and the hazards that they produce and their impact on humans. Emphasis is placed on current earthquake and volcanic events, as well as on momentous events from the past, such as the San Francisco earthquake of 1906, the 79 A.D. eruption of Vesuvius that destroyed Pompeii, and the more recent eruptions of Mount St. Helens (Washington), Pinatubo (Philippines) and Kilauea (Hawaii).
HISTORY	383	History	American Environmental History	Focused	The interaction of humans with the natural environment of North America since European settlement; the ways in which Americans acted over four hundred years to shape their environment, as well as shared their perceptions of the environment through painting and photography, nature writing, travellers' accounts, fiction, and material culture.
HISTORY	391N	History	S-Conservation of Nature and Culture	Focused	This course will explore the history of various efforts around the world to conserve nature and culture. Students will learn about the history of the Conservation Movement in North America, but also to think broadly about what the idea of conservation means in archeology, folklore, historic preservation, and the fine arts, especially in a time of globalization and climate change.
HISTORY	397LA	History	Environmental History of Latin America	Focused	This course will trace the environmental history of Latin America. Beginning with the Pre-Columbian era, the course will move on to examine the intertwining of environmental, social, and cultural transformations brought about by the conquest of the Americas by Europeans, and finally the environmental and related social repercussions of the emergence of modernity, urbanization, and industrialization in the era of independence. The course will focus not only on environmental change, its causes and social repercussions, but equally on examining cultural attitudes and ideas to environment and the changes that these ideas have undergone at different phases in Latin America's history.
LEGAL	494DI	Legal Studies	Environmental and Public Policy Dispute Resolution	Focused	This course examines multiparty disputes involving topics such as land use management, water rights, e-healthcare, and pollution remediation. We explore dispute resolution's role in enhancing democratic participation in decision making of public import.
MANAGMNT	366	Management	Foundations of Sustainable Enterprise	Focused	Examines current threats to the sustainability of the global economy, the environmental and social impacts of current business practices, and how both governmental regulations and for profit business initiatives are needed to address these issues.
MANAGMNT	462	Management	Social Entrepreneurship	Focused	Social entrepreneurship involves using the skills and strategies of business to innovatively and sustainably solve social, environmental, and economic problems. As a result, this course will help students identify and create business opportunities that have positive social impacts.
MANAGMNT	488	Management	Strategic Management for a Sustainable World	Focused	There are three primary threads in the course. First, the course serves as an overview of the key concepts and frameworks of strategic management and shows how these can be applied in the discussion of particular cases. The second thread is sustainability. Typically, strategic thinking has limited itself to a concern with economic performance; competitive advantage and above-average profitability have been seen as the 'holy grail.' This course takes a broader view and sees the 'bottom line' in strategic thinking as including environmental and social impacts. The third thread is actually 'doing?' strategy. The course incorporates an internet-based simulation called Capstone? that puts its players into decision-making situations much like those faced by strategists. Performance in the simulation provides opportunities to use strategy and sustainability concepts and to draw on and use learning from other courses in the curriculum.
MANAGMNT	391E	Management	S-Environmental Law	Focused	No description available
MARKETNG	491SM	Marketing	S-Marketing for a Sustainable Business	Focused	No description available
NATSCI	389H	College of Natural Sciences	Team-Oriented Lab Discovery in Renewable Energy	Focused	iCons III: "Team-Oriented Lab Discovery in Renewable Energy" involves student-driven, team-oriented laboratory projects focused on the interrelated principles of energy generation, conversion, storage and consumption, particularly emphasizing the science underlying renewable energy systems. Projects incorporate experimental techniques from the chemical, physical, mathematical, and life sciences. The intent of this course is to examine cross-disciplinary methods to address real world energy-related issues. Students will be expected to understand paths to energy solutions that cross many disciplines, and how an interdisciplinary approach may be used to solve energy problems faced by society.

NRC	100	Environmental Conservation	Environment and Society	Focused	In this course, you will both individually and in teams to explore the inherently interdisciplinary environmental challenges facing society. You will engage in discussions, debates, and problem-based team projects to learn about, critically consider, reflect on, and address both local and global environmental problems. You will investigate the impacts of human activities on forests, water, fish and wildlife populations, urban areas, and climate change. If you are an NRC major, this will prepare you for upper-level studies.
NRC	185	Environmental Conservation	Sustainable Living: Solutions for the 21st Century	Focused	Students will work in teams to research and develop solutions to the sustainable challenges facing our society. They will collaborate to investigate, critically evaluate, effectively communicate, and reflect on the multifaceted challenges associated with addressing sustainable resource use, water, food, energy, transportation, waste management, and climate change. Students will also work in teams during class on exercises in which they research case studies, debate controversies, assess political and cultural contexts, and identify technological advances and barriers, gaps in scientific knowledge, and opportunities for change in the 21st century.
NRC	225	Environmental Conservation	Forests and People	Focused	Forests are complex and fascinating ecosystems. They have been shaped by ecological processes over 1,000s of years and also by centuries of human use, abuse, neglect, and care. They are always changing. Forests are essential to human health and well being yet they are often taken for granted. Forests and People explores the: Unique values that forests have in our culture; key characteristics of forests in the Northeast and how and why they have changed through time; historical and contemporary leaders in forest conservation; sustainable forest management principles and practices; current forest use patterns and trends and the challenges and opportunities they the present in the 21st century.
NRC	252	Environmental Conservation	Fundamentals of Applied Ecology	Focused	Introduction to the principles of ecology, including structure and dynamics of populations, communities, and ecosystems. Applications of ecological principles to current problems in natural resource management and conservation. Restricted to majors in the Department of Natural Resources Conservation.
NRC	260	Environmental Conservation	Fish Conservation and Management	Focused	Overview of the biological, sociological, historical, and economic factors that influence the use and conservation of our nation's fisheries resources.
NRC	261	Environmental Conservation	Wildlife Conservation	Focused	Fundamental ecology and principles of wildlife management. Emphasis on wildlife habitat and population characteristics and responses.
NRC	310	Environmental Conservation	Community Forestry	Focused	Management principles of municipal and utility tree care, land use problems, tree laws and ordinances.
NRC	382	Environmental Conservation	Human Dimensions of Natural Resource Management	Focused	Introduction to the human dimension of resource management. Topics include social values, demographics, outdoor recreation, agency history and mandates, economic valuation, resource allocation, stakeholder groups, the commons dilemma, and other topics.
NRC	409	Environmental Conservation	Natural Resources Policy and Administration	Focused	Introduction to the processes of natural resource policy formulation, administration of public lands, and social values related to managing the nation's renewable natural resources. History of current federal laws, policies, and programs, and discussion of the roles of various resources management agencies.
NRC	191A	Environmental Conservation	Seminar in Arboculture and Community Forestry	Focused	No description available
NRC	197FF	Environmental Conservation	ST-Forest Fire Control	Focused	Training in forest fire control principles and procedures including fire-line safety, fire weather, and fire behavior. Students may meet Federal Interagency Fire Qualification for "Firefighter."
NRC	390E	Environmental Conservation	Evolution and Conservation	Focused	This course provides the evolutionary basis for understanding biological problems in conservation. Evolutionary thinking provides more comprehensive approaches to conservation biology and future conservation practitioners must be equipped with the ability to think about conservation from an evolutionary perspective. Major topics will include: (1) a survey of evolutionary theory; (2) the application of evolutionary thinking to case studies and problems in conservation biology.
POLISCI	253H	Political Science	International Environmental Policy and Politics, Honors	Focused	This course will introduce students to the study of international environmental politics. It will review the nature of global environmental threats, and the history of collective responses to these problems, looking particular at the contributions of governments, international organizations, NGOs, the private sector and the scientific community to broader international environmental governance.
PUBHLTH	303	Public Health	Introduction to Environmental Health Sciences	Focused	Introduction to the physical, chemical, and biological implications relating to human exposures to a variety of environmental contaminants, including air, water, and soil pollution, infectious disease, and occupational environmental health.
PUBHLTH	390X	Public Health	Sustainable Development	Focused	This course is designed to introduce students to the challenges of sustainable development of low income countries, focusing on Haiti as an important case study. . Students will learn about the history of Haiti: public health issues there in the context of global health priorities; emerging constraints on economic development programs due to concerns about environmental degradation and global warming.
RES-ECON	102	Resource Economics	Introduction to Resource Economics	Focused	Microeconomic theory for majors and non-majors. Concepts of supply, demand, markets, natural resource management, economic policy. Applications to business and government decision-making emphasized.
RES-ECON	262	Resource Economics	Environmental Economy	Focused	Economic analysis of environmental problems focusing on air, water, and land pollution. Emphasis is on analyzing the individual incentives that lead to pollution, the valuation of environmental quality amenities, and the design and evaluation of regulations that seek to improve environmental quality. Includes the economic analysis of global climate change.
RES-ECON	263	Resource Economics	Natural Resource Economics	Focused	Economic analysis of natural resource use and conservation. Includes analyses of the use of fuel, forest, marine and biodiversity resources. Focuses on evaluating natural resource use in terms of efficiency and sustainability, and designing regulations for correcting inefficient and unsustainable resource markets.
STOCKSCH	115	Stockbridge School of Agriculture	Environmental Biology	Focused	Introduction to understanding the biological and physical relationships among plants, soils, and the environment. Exploring how various human activities affect the environment with specific attention to plant and soil resources. Topics include: ecosystem sustainability; food and agriculture (and related issues of biotechnology, food access, and pest management); soil and its preservation; wetlands, water pollution and treatment technologies, and resource conservation.
STOCKSCH	120	Stockbridge School of Agriculture	Organic Farming and Gardening	Focused	Introduction to principles of soil fertility and crop management by organic procedures which are contrasted and evaluated against conventional chemical methods of farming.
STOCKSCH	265	Stockbridge School of Agriculture	Sustainable Agriculture	Focused	Exploration of ethical, practical and scientific aspects of agricultural sustainability including economic, social and environmental impacts of food and farming. Uses systems thinking tools to compare industrial and ecological agriculture.
STOCKSCH	335	Stockbridge School of Agriculture	Environmental Physiology and Biology of Spring Greenhouse Crops	Focused	Greenhouse culture of spring greenhouse crops.
STOCKSCH	342	Stockbridge School of Agriculture	Pesticides, Public Policy, and the Environment	Focused	Current issues associated with pesticide use; includes discussion of role of pesticides in agriculture, public health, and other related areas; fate of pesticides in the environment; and public perception of pesticides. Case studies examine benefits and risks of pesticide use; environmental cancer; and role of media and public interest groups in pesticide decisions. Alternatives to current heavy reliance on chemical technology in pest control. Current and pending federal, state, and local legislation.

STOCKSCH	350	Stockbridge School of Agriculture	Sustainable Soil and Crop Management	Focused	Maintenance and enhancement of long-term productivity and sustainability of soil in food and feed production. Students will gain an integrated knowledge of soil and crop influences on cropping systems. The lab includes several farm visits, farmers and students presentations.
STOCKSCH	379	Stockbridge School of Agriculture	Agricultural Systems Thinking	Focused	Systems thinking is a way of understanding complex real-world situations such as those often encountered in sustainable food and farming careers. Systems tools are needed to complement more traditional discipline-focused scientific approaches when a problem under study: 1) is complex; 2) involves multiple relationships; and/or 3) involves human decision-making. This course will introduce students to systems tools for unraveling complexity and integrating their learning from previous courses and experience. Case studies and real farms students learned about in PLSOILIN 265 - Sustainable Agriculture will be used as model systems for application of integrative systems tools. Satisfies the Integrative Experience requirement for BS-PLSOIL majors in the Sustainable Food and Farming Subplan.
STOCKSCH	382	Stockbridge School of Agriculture	Writing for Sustainability	Focused	Satisfies the Junior Year Writing requirement for PLSOILIN majors concentrating in Sustainable Agriculture and related fields. Practice and improve writing while clarifying career goals and improving professional communication skills.
STOCKSCH	190A	Stockbridge School of Agriculture	Introduction to Sustainable Food and Farming	Focused	Highly interactive and participatory introduction to the Sustainable Food and Farming major, focused on academic preparation, internships and careers. Especially for first year students and transfers into the major.
STOCKSCH	197G	Stockbridge School of Agriculture	ST-Introduction to Permaculture	Focused	A foundation in permaculture history, ethics, principles, design process, and practical applications, rooted in the observation of natural systems. By observing key ecological relationships, we can mimic and apply these beneficial relationships in the design of systems that serve humans while helping to restore the natural world. This course trains students as critical thinkers, observers, and analysts of the world(s) around them, and then goes on to provide students with the tools needed to design for inspired and positive change.
STOCKSCH	198F	Stockbridge School of Agriculture	P-Sustainable Food and Farming Internship	Focused	Required of all students majoring in Fruit and Vegetable Crops. Five months' cooperative work training in the specific field of study; reports required.
STOCKSCH	297PD	Stockbridge School of Agriculture	ST-Permaculture Design Practice	Focused	This three-credit course includes in-class lectures, field trips, design studio and a hands-on field component, to offer students a deepened practice in permaculture design process and techniques. The course culminates with students completing their own permaculture design for a site in the pioneer valley.
STOCKSCH	298A	Stockbridge School of Agriculture	Agricultural Practicum	Focused	No description available
STOCKSCH	397S	Stockbridge School of Agriculture	ST-Sustainable Site Design and Planning	Focused	An exploration into the fundamentals of landscape design with particular attention to integrating both existing and new buildings sustainably into their landscapes. Students investigate sustainable design strategies that address the ecological, water, energy and food system links between buildings and their supporting sites, as exemplified by the LEED (Leadership in Energy and Environmental Design) rating system and Sustainable Sites Initiative. Course will be primarily lecture format leading to a student design project to be presented digitally.
STOCKSCH	491B	Stockbridge School of Agriculture	S-Climate, Energy, Biochar, and Agriculture	Focused	No description available
STOCKSCH	498E	Stockbridge School of Agriculture	Farm Enterprise Practicum II	Focused	Continuation of guided practicum experience (PLSOILIN 398E), with students maintaining crops planted in the Spring semester and preparing fields for winter. Students will harvest, clean, store and market their crops. Participation in weekly seminar required. Students will prepare written report covering all aspects of the production and marketing components of their target crops and present results/recommendations to the group.
SUSTCOMM	197A	Sustainable Community	ST-Introduction to the Planning and Design of a Sustainable World	Focused	No description available
CE-ENGIN	121	Civil and Environmental Engineering	Introduction to Civil and Environmental Engineering Measurements	Focused	Introduction to various measurements used in civil engineering. Topics include basic surveying principles involving linear and angular measurement, leveling, traversing, and stadia. Also, smaller scale measurements, such as displacement and load. Includes precision instruments such as verniers, calipers, micrometers and load cells. With lab.
GEOGRAPH	470	Geosciences	The Chinese City: Geography, Environmenta, and Development	Focused	China's cities are home to ten percent of the world's population. This lecture, discussion, and research course analyzes these cities' rapidly changing urban forms, environments, economies, and societies.
ANTHRO	100	Anthropology	Human Nature	Related	Introduces the full range of human cultural and biological diversity. Human evolution, rise and fall of civilizations, non-Western cultures, and the human condition in different societies today. Emphasis on the relationships among biological, environmental, and cultural factors.
ANTHRO	104	Anthropology	Culture, Society, and People	Related	The nature of culture and its role in creating forms of social, economic, and political life in diverse historical and geographical contexts. Readings drawn from contemporary ethnographies of various peoples, analyzing the persistence of cultural diversity in the midst of global social and socioeconomic forces.
ANTHRO	367	Anthropology	Archeological Survey Methods and Practices	Related	Basic archaeological field surveying. Introductions to local prehistory, elementary research design, map reading, field reconnaissance, subsurface testing, and state regulations for field work.
BCT	204	Environmental Conservation	Construction Materials and Methods	Related	Provides an introductory overview of the various materials used in construction. Topics covered: structural, physical and long-term performance, material and product manufacturing, common building systems and construction principles.
BCT	420	Environmental Conservation	Designing with 3D CAD and BIM	Related	Presents advanced topics in architectural CAD in a problem-based environment: 3D modeling, parametric building design, building information models (BIMs), material takeoff, energy-efficient planning, rendering and presentation.
BCT	494BI	Environmental Conservation	BCT Senior Seminar	Related	Senior BCT students will explore their own perspectives on professional careers in Building and Construction Technology. They will collaborate in three-person teams to fully develop a business plan for a product/service of their choosing. They will assess their current skill sets and compare those to what is required for success in the business endeavor. They will learn the business planning process. Each week a different business professional meets with students in this class to discuss careers in the industry. Often, the speakers are potential employers who are accepting resumes. Some speakers will schedule interviews for internships and full-time job placement.
BCT	320	Environmental Conservation	Intro to CAD in Construction and Architecture	Related	This course provides an introduction into construction-related Computer-Aided-Design (CAD) tools. By using industry-standard software in exercises and projects, students gain the capability to model construction projects and create industry-standard architectural drawings.
CE-ENGIN	270	Civil and Environmental Engineering	Systems Analysis and Economics for Civil Engineers	Related	Introduction to decision making techniques used in Civil and Environmental Engineering. Develop and solve mathematical models for optimizing engineering systems. Use basic economic concepts to make decisions between alternative engineering designs. Incorporate environmental sustainability and social issues into engineering decisions.
CE-ENGIN	471	Civil and Environmental Engineering	Water and Wastewater Systems	Related	Introduction to the design of water and wastewater systems. Topics include water supply, design of transmission and distribution systems, drinking water treatment, wastewater collection and design of sanitary sewers, and wastewater treatment systems.

CE-ENGIN	473	Civil and Environmental Engineering	Groundwater	Related	Hydrology, geology, chemistry, and engineering design of groundwater systems. Topics include groundwater and the hydrologic cycle, groundwater hydraulics, groundwater as a resource, natural groundwater chemistry, groundwater contamination and remediation.
COMM	494FI	Communication	Food as Communication	Related	Food matters. As the most material of substances, food literally matters for survival. While the need for food to satisfy hunger and strengthen the body is universally understood, what counts as food, its relative abundance or scarcity, and its relationship to the body, identity and culture are socially created and highly symbolic. Still for most people what we eat and why we choose to eat it seems the most common of ?common sense?. Meanings attached to what is edible or inedible, good or bad, nutritional or unhealthy, gourmet or junk food are highly subjective and deeply cultural. Throughout your university career you have had the opportunity to take courses that provided you with a variety of lenses for examining the ways people use language to make meaning of their worlds. How might you use some of the theories of concepts from these courses to examine your own food beliefs and practices and the consequences of those practices on your own and others' lives and livelihoods? Assignments in this course include self-reflection papers, wikipedia food map, and community-based group project. This is a team-based learning course and satisfies the integrative Experience requirement for Comm and BDIC majors.
ECON	105	Economics	Introduction to Political Economy	Related	Introduction to economic analysis for majors and nonmajors. Facts and concepts basic to understanding the U.S. economy today. Topics may include: unemployment, economic development, inequality, technology, social wealth, environment, government economic policy, economic alternatives, race and gender, and discrimination. Contrasting theoretical perspectives.
ECON	367	Economics	Post Independence African Development	Related	This course provides the tools for understanding the evolution of African economies after independence and their current situation in the global economy. The course emphasizes the importance of the interactions between political institutions and economic systems in determining economic and social outcomes. The course will begin with a quick overview of pre-colonial and colonial Africa followed by a selection of topics on independent Africa. Students will lead a series of presentations of country case studies. The aims of this course are both to understand African economies and their trajectory specifically and more generally to build both students' ability to critically evaluate and respond to economic arguments that are a blend of both facts and ideology and a broader understanding of World and African history and socio economic stratification. Students will be expected to complete 9 written assignments ranging from 2 page response papers to a full 12 page research paper. Students will also participate in peer reviewing a colleague's work.
ECON	499D	Economics	Honors Thesis Seminar - 2nd Semester	Related	No description available
ENVIRSCI	452	Environmental Science	Hazardous Waste Operations and Emergency Response	Related	Meets federal requirements of 40-hours training involving methods and concerns for workers handling hazardous materials as specified by OSHA under 29 CFR 1910.120. First aid and CPR sessions provided for uncertified individuals. Site specific Health and Safety Plans prepared prior to and after entry into an industrial facility. Simulated drills performed by students in personal protective equipment responding to unknown incidents to challenge skills developed in lecture. Certifications awarded to students who meet course requirements, pass the final exam, and attend all lectures. Course credit may be awarded if certification is not obtained.
ENVIRSCI	194A	Environmental Science	Into Seminar II	Related	Required for all new majors. Introduces participants to environmentally related facilities and careers through a student conducted interview of professionals and in-class presentations and discussions.
ENVIRSCI	294A	Environmental Science	S-Career and Curriculum Planning Seminar	Related	This course will explore some of the career opportunities available to graduates of the Environmental Science major. Periodic guest speakers will present seminars about career opportunities in both private consulting and public agency sectors of the environmental arena. Students will investigate the various focus areas available within Environmental Science (e.g., policy and law, global change ecology, habitat restoration, environmental toxicology, natural resource inventory and assessment, hazardous waste remediation? etc.) with a goal of planning their upper-level elective course selections. Students will be introduced to a variety of minors, certificates, and double majoring opportunities that would add value to their undergraduate degrees. Time will be spent building an individualized curriculum plan to meet specific career goals and outcomes for each student.
FOOD-SCI	101	Food Science	Food and Health	Related	The role of food technology in meeting health needs. Topics include the development of new foods for the control of weight, reduction of risk in chronic diseases, and the utilization of food science to produce a varied, safe, healthy, and nutritionally sound diet. The possible alleviation of world hunger through technology.
FOOD-SCI	120	Food Science	Food Preservation - Why and How	Related	Food preservation methods such as sterilization methods, refrigeration, freezing, drying explained in terms of physical, chemical, and biological principles. Their implementation in industrial processes and impact on society evaluated.
FOOD-SCI	150	Food Science	The Science of Food	Related	Biological and chemical principles underlying the maintenance of food quality during the period after harvest to consumption. Topics include chemical, enzymic, physical, and biological deterioration; implications and prevention; food toxicology.
FOOD-SCI	466	Food Science	Hyg. Food Handling	Related	Overview of microbiology principles as applied to food safety. Emphasis on the control of microbial food-borne illnesses in institutional and industrial settings. Labs teach basic techniques used for microbial testing of foods. With lab.
FOOD-SCI	1901	Food Science	Introduction for the Future Food Scientist	Related	This course will introduce the discipline and profession of food science through an overview of food composition, commodities, food quality and deterioration, food preservation, and product development.
GEOGRAPH	102	Geosciences	The Human Landscape	Related	A wide-ranging introduction to the ways people shape the world they live in. We will study the themes and concepts of human geography through the current issues and large questions which guide them. Lectures and reading will focus on the geographic aspects of cultural diversity, population issues, states vs. nations, the global economy, development, urbanization and the human transformation of the earth. We will cover major subdivisions of human geography including cultural geography, population geography, economic geography, social geography, urban geography and political geography.
GEOGRAPH	314	Geosciences	Writing in Geography	Related	Readings, lecture, group and individual tutorial, exercises, and peer review focusing on critical thinking and geographic writing.
GEOGRAPH	352	Geosciences	Computer Mapping	Related	Mapping projects through the use of software mapping packages. Students select their own final projects.
GEOGRAPH	468	Geosciences	GIS and Spacial Analysis	Related	This course introduces fundamental concepts and methods of geographic information system. Emphasis on developing skills using GIS to solve typical spatial problems in the geosciences and environmental sciences.
GEOGRAPH	492NP	Geosciences	S-National Parks and Protected Area	Related	This course explores efforts in the U.S. and worldwide to promote biodiversity conservation, sustainability, and social justice through the designation and management of national parks and other protected areas.
GEOLOGY	101	Geosciences	The Earth	Related	Nature and origin of the earth; volcanism; minerals and rocks; earthquakes; plate tectonics; mountain belts; geologic time scales; wave, river, glacial, and wind action in modification of landscape and atmosphere; the asteroid impact hypotheses; genesis of non-renewable resources, geologic basis for environmental decision making. Field excursions.

GEOLOGY	131	Geosciences	Experiencing Geology	Related	A practical approach to the Earth in the laboratory and field. Understanding rocks and minerals, reading topographic and geologic maps, investigating the geologic history of the Connecticut Valley, measuring stream flow and water quality.
HISTORY	120	History	Latin America: The Colonial Period	Related	General view of the cultural, economic, and political development of Latin America, 1492 to 1824. Topics include the Iberian and Indian backgrounds; Spanish and Portuguese imperial organization; role of Indians, Blacks, and Europeans in the New World; the coming of independence.
HISTORY	181	History	Hisotry of Western Science and Technology II	Related	Science in the modern world from the Enlightenment to the Cold War. Key scientific issues of the modern age, the social organization of science, the place of the scientific community in larger social and cultural context, and the expanding relationship between science and modern technology.
HISTORY	397VW	History	ST-Public History Workshop	Related	This workshop provides students with a foundation on emerging methods in digital and public history -- such as geo-mapping and the online exhibition of historical source materials. Class activities and assignments will include both digital components and field experiences around Amherst and the surrounding area.
HT-MGT	455	Hospitality and Tourism Management	Critical Issues Food Industry	Related	Selected case studies, management simulations, and journal readings in commercial and non-commercial segments of the food service industry. Develops systemic and team-based decision-making skills for solving management and operations problems.
LANDARCH	397C	Landscape Architecture and Regional Planning	ST-Studio IV	Related	Institutional and commercial scale -- issues of design for commercial and industrial uses. May cover the spectrum from a site plan for an office complex to a marina. Issues of cost, client needs, program, and politics. Site planning -- introduction to concepts of site planning for housing developments. Students perform a detailed site assessment using methods learned in natural factors and previous studio on a 100-acre (+/-) site and apply them to development of a master plan.
LANDARCH	397D	Landscape Architecture and Regional Planning	ST-Studio IV	Related	Institutional and commercial scale -- issues of design for commercial and industrial uses. May cover the spectrum from a site plan for an office complex to a marina. Issues of cost, client needs, program, and politics. Site planning -- introduction to concepts of site planning for housing developments. Students perform a detailed site assessment using methods learned in natural factors and previous studio on a 100-acre (+/-) site and apply them to development of a master plan.
LANDARCH	494A	Landscape Architecture and Regional Planning	S-Professional Practice	Related	Models of professional office structure: management, organizational behavior, and economics. Guest professionals give insights into the profession and how an office should be managed. Topics include: ethics, contracts, compensation, specifications, contract management, marketing, budgets, and cost analysis.
LANDARCH	494LI	Landscape Architecture and Regional Planning	Landscape Planning and the Cultural Landscape	Related	Landscape planning crosses scales from regional to site specific, taking a real world problem to creative sustainable solutions. An introduction to design research methods, inventory and assessment models and techniques for policy planning, regional scale design proposals, and site selection for particular development types. Implementation of a greenway solution.
M&I-ENG	422	Mechanical and Industrial Engineering	Stat Quality Control	Related	Introduction to the fundamental tools of statistical quality control and related statistical techniques. Topics include control charts, sampling plans, process capability indices, and other statistical techniques. Emphasis on basic concepts, their application, and the risks associated with various quality control procedures.
MANAGMNT	241	Management	New Venture Creation	Related	New Venture Creation introduces students to the process of bringing an innovation to life. Students will learn how to analyze changes in society that create the need for innovation. In teams, students will identify a specific opportunity, investigate its feasibility, and plan its operation.
MANAGMNT	260	Management	Introduction to Law	Related	Overview of law and legal systems; attention to legal aspects of management problems.
MANAGMNT	341	Management	New Ventures	Related	This course provides a broad view of entrepreneurship. Topics include the business plan, raising money for a new venture, assessing the riskiness of new businesses and the unique management challenges of startups.
MANAGMNT	362	Management	Law of Enterprise Organization	Related	The economic functions and consequences of agency, partnerships, and corporations.
MANAGMNT	H260	Management	Honors College for MANAGMNT 260	Related	No description available
MARKETNG	301	Marketing	Fundamentals of Marketing	Related	Introduction to marketing; survey of topics relevant to comprehensive study of marketing. Emphasis on describing the marketing process and on stressing the implications of these activities for society.
MICROBIO	480	Microbiology	Microbial Physiology and Diversity	Related	Description of the structure and function of key aspects of microorganisms and approaches to their study. Topics include cell structure, bacterial growth, energy generation, biosynthesis of macromolecules, and the integration of these processes in an environmental context. Emphasis is on modern approaches to these topics using biochemistry and genomic tools.
NATSCI	189H	College of Natural Sciences	Global Challenges, Scientific Solutions	Related	This 4-credit course brings together topics from Life Sciences, Physical Sciences, Natural Systems, and Social Systems in the context of real world scientific issues. Students will be expected to grapple with the scientific underpinnings of complex problems, including issues surrounding Clean Water, Climate Change, Energy Demands, and Disease and Biomedicine. Case studies will serve as the format/foundation in which students will learn and use fundamental scientific principles to investigate these challenges and quantify the scientific contributions to solutions. The case studies pursued will have political, social, and economic relevance, allowing for the study of scientific concepts and methods as they impact our society.
NATSCI	289H	College of Natural Sciences	Integrated Scientific Communication	Related	iCons 2 engages students in written and oral communication skill-building, emphasizing the different demands placed on scientists when we interact with scientists from our own discipline, other disciplines, younger students, and with the general public. For most departments in the College of Natural Sciences and College of Engineering, iCons 2 fulfills the Junior Year Writing requirement. Students develop the ability to create, articulate and write logical arguments to scientists and non-scientists. This necessitates learning to listen and speak well with scientists from other fields, and to give and receive constructive criticism. Work on theme-based projects is produced both individually and in teams, helping each student build their own skill set while building on progress from iCons 1.
NATSCI	490SH	College of Natural Sciences	Integrative Science Senior Exposition Seminar	Related	NatSci 490 SH enhances the thesis research experience for students in the iCons program through peer support teams and advanced scientific communication as students prepare to present their research findings at the Statewide Undergraduate Conference and at the iCons Senior Exposition. This course satisfies Integrative Experience criterion #1 by providing a structured context for students to reflect on and to integrate their previous learning as they prepare to present their senior research findings in these two public forums.
NATSCI	494I	College of Natural Sciences	Global Issues in Applied Biology	Related	This course will consist of three case study modules. Each module is a real-world problem that integrates knowledge from a biological, social, political, and economic perspective. Students are expected to transfer their knowledge from the broader General Education training into specific real-world issues.
NRC	126	Environmental Conservation	Insects and Human Society	Related	Survey with emphasis on the successful design of insects and their innovative features. Aspects of insect biology, including communication, defense, feeding, and mating behaviors. Social behavior with a focus on termite, ant, and honey bee societies. Beneficial uses of insects such as silk and pollination, and negative interactions with humans, including disease vectors, parasites, and crop pests.
NRC	210	Environmental Conservation	Arboricultural Field Techniques II	Related	Basic chain saw use and safety, including directional felling, bucking, and limbing trees; notch and back cuts; using wedges; cutting branches and trunks under tension.

NRC	211	Environmental Conservation	Wildlife Sampling and Identification	Related	This course will provide students with basic experience in identifying aquatic and terrestrial vertebrate wildlife and with examples of typical means of capturing/sampling such organisms. The course involves the handling of animals and animal specimens, and all activities have been approved by the Institutional Animal Care and Use Committee (IACUC).
NRC	213	Environmental Conservation	Arboricultural Field Techniques III	Related	No description available
NRC	333	Environmental Conservation	Principles of Arbor II	Related	No description available
NRC	390G	Environmental Conservation	Plant Health Care Diagnostics	Related	Using the understanding gained from previous coursework in pathology, entomology, dendrology, soil science and professional knowledge from work experience in the green industry, students will explore proper techniques and procedures relative to the identification of plant health-related concerns, proper sample submission to lab facilities and plant health care policy and decision-making.
NRC	391A	Environmental Conservation	Sem-Curric Planning	Related	Development of individualized curricula for the major's elective credits. University and program graduation requirements, second majors, minors, and curriculum plans discussed.
NUTRITN	130	Nutrition	Nutrition for a Healthy Lifestyle	Related	Introduction to the science of human nutrition and the relationship of food and nutrients to health and disease. Topics covered include digestion, and functions of macro and micro nutrients as well as current recommendations for nutrient intake. We will also discuss energy balance and weight control.
NUTRITN	210	Nutrition	Scientific Food Principles and Meal Planning	Related	Meal management; emphasis on nutritional, economic, time, ethnic, and cultural factors. Experimental application of the chemical and physical properties of food in food preparation. With lab.
NUTRITN	480	Nutrition	Medical Terminology and the Nutrition Care Process	Related	An introduction to Medical Terminology and the nutrition care process. This will include the steps involved in writing a nutrition care plan.
NUTRITN	130H	Nutrition	Nutrition for a Healthy Lifestyle	Related	Introduction to the science of human nutrition. Relationship of health to food intake. Description, digestion, absorption, metabolism, interactions and functions of nutrients. Nutrient and energy requirements of young adults, athletes, older individuals. Nutrient deficiency symptoms. Body weight control. Eating disorders. Vegetarianism, other dietary preferences. Planning adequate diets that fit life-styles. Not for Nutrition majors.
POLISCI	359	Political Science	International Political Economy	Related	This course provides a thorough introduction to international political economy (IPE): the study of the dynamic interplay between international economics and politics. The course first reviews different theoretical approaches to analyzing and explaining governance in the contemporary international system and the basis for world order. It then covers a wide variety of contemporary issue areas in international political economy, including the politics of international trade, development, and international financial regulation.
POLISCI	291F	Political Science	S-The Politics of Food	Related	This course examines the power relations that structure the production, distribution, and consumption of food within an industrialized and globalized food system. Topics covered include: the relationship of food to individual and collective identity; the environmental consequences of the industrial food system; the cultural politics of food; the impact of relative wealth and poverty on food security and public health; the scope and function of government regulation; social movements contesting the industrial food system.
PUBP&ADM	190A	Public Policy and Administration	Water, Oil, and Blood: The Middle East in Global Policy	Related	This course introduces students to the contemporary dynamics of the Middle East and North Africa. By using as metaphors three basic substances that are important to the region and the world, the course spans basic issues of Middle Eastern cultures, recent history, and politics in an innovative and interdisciplinary fashion. More specifically, the course includes the attention to Islam, Western colonialism, Israel, Iran, contemporary growth, regional conflicts, the role of the US, and the role of the Arab uprisings of 2011, among other topics. Student participation and involvement in active learning simulations are expected, though no prerequisites are necessary.
PUBP&ADM	195C	Public Policy and Administration	ST-Transforming Your World: Introduction to Community Engagement	Related	To imagine changing even a small part of the world is a daunting, yet exhilarating proposition. Through class exercises, readings, exploration of social policy, guest speakers and a project that takes you to parts of the campus you might otherwise not explore, you will acquire knowledge and skills necessary for becoming a person who can make a difference. By the end of the semester you will have learned to connect ideas with action, have made a positive contribution to your community, and understand, through experience, the personal and social value of community engagement.
RES-ECON	121	Resource Economics	Hunger in the Global Economy	Related	Explores the causes of hunger (chronic undernutrition) from an economic perspective. Focus on how population growth and economic development are increasing demand for food and on the prospects for food production to supply those needs at affordable prices, while sustaining the environment. Discussion in the context of the global economy in which increased trade links even the poorest urban and rural residents in developing countries to market forces.
RES-ECON	162	Resource Economics	Consumer in Society	Related	An introduction to Consumer Economics and the role that consumers play including their decision-making and market and non-market consumption activities. Focus on contemporary consumer economic issues in addition to topics such as consumer rights and responsibilities, the impact of advertising, use of consumer credit, product safety, consumer fraud, and legal protections available to consumers.
RES-ECON	452	Resource Economics	Industrial Organization	Related	Market structure models with application to various industries. Firm behavioral strategies under different market structures. The role of product differentiation, advertising, market power, mergers, barriers to entry, price and non-price rivalry. Market performance including prices, costs, profits, labor issues, and progressiveness.
RES-ECON	460	Resource Economics	Family Economic Systems	Related	This course provides an economic analysis of the behavior and circumstances of families/ households. It will examine issues such as decision-making, household formation and dissolution, allocation of time, human capital, fertility, labor-force participation, income inequality, and aging. Standard microeconomic analysis will be applied to the production and consumption activities of the household.
RES-ECON	471	Resource Economics	Cost Benefit Analysis	Related	Theoretical foundations and practical procedures of benefit-cost analysis as applied to public natural resources and environmental projects, programs and regulations. Critical discussion of strengths and weaknesses of this tool. Topics from water resources, land use, outdoor recreation, air quality, coastal zone management, and other natural resources and environmental areas.
RES-ECON	394LI	Resource Economics	Life is Full of Choices	Related	Students will reflect on and integrate their learning and experience through the following activities: 1) Update a personal Reflective Portfolio and complete a series of activities in which they inventory and map courses taken, work experience, and extracurricular activities and identify skills they have attained through this experience; develop an updated resume, a networking website profile, and presentations of themselves as Resource Economists; and explore careers in Resource Economics and identify the skills needed to succeed in those career paths, and 2) Participate in weekly team activities comparing personal portfolios; honing communications about what Resource Economists know and can do, and identifying Resource Economics projects and making presentations seeking funding.
RES-ECON	H471	Resource Economics	Honors College RES-ECON 471	Related	No description available
STOCKSCH	104	Stockbridge School of Agriculture	Plant Nutrients	Related	Functions of mineral nutrients in plants, effects of mineral deficiencies, and sources of these nutrients to prevent or alleviate deficiencies in crop production.

STOCKSCH	105	Stockbridge School of Agriculture	Soils w/ Lab	Related	Interrelationship of soils and higher plants. Physical, chemical, and biological properties of soils. Practical approach to current problems through basic soil principles. Prerequisite: some knowledge of chemistry.
STOCKSCH	106	Stockbridge School of Agriculture	Soils	Related	Interrelationship of soils and higher plants. Physical, chemical, and biological properties of soils. Practical approach to current problems through basic soil principles.
STOCKSCH	107	Stockbridge School of Agriculture	Turfgrass Insects	Related	Principles and practical methods of controlling turf insect pests.
STOCKSCH	170	Stockbridge School of Agriculture	Pesticide Certification	Related	Independent preparation for the state pesticide certification examination and licensure. The State Pesticide Exam Study Manual is used and available for purchase either online or at the UMass Extension Bookstore. Students must apply to take the exam; applications must be submitted by the deadline date (one week prior to the exam). Examinations are given at various times throughout the state.
STOCKSCH	182	Stockbridge School of Agriculture	Principles of Pesticide Management	Related	Topics include state and federal pesticide laws and regulations, pesticides and the environment, handling and storage of pesticides, classes and formulations of pesticides, safety and application equipment, understanding the pesticide label, toxicity, proper calculation and mixing of pesticides, and history of pesticide use. Includes preparation for the Massachusetts Pesticide Core Examination.
STOCKSCH	201	Stockbridge School of Agriculture	Equipment Operations	Related	Introduction to the selection, operation, safety and maintenance of farm tractors and equipment. Lectures and hands-on experience with emphasis on farm machinery used to operate an equine facility.
STOCKSCH	235	Stockbridge School of Agriculture	Pruning Fruit Crops	Related	Theory and practice of pruning deciduous fruit plants/trees. Practical, hands-on experience is the focus of the class.
STOCKSCH	280	Stockbridge School of Agriculture	Herbs, Spices, and Medicinal Plants	Related	Introduction to the growth, culture, and science related to the production and use of herbs, spices, and medicinal plants. Emphasis on plants used in the home; discussion of bioactivity of plant extracts. Practice in seeding, growing, oil extraction, and utilization of these plants. With lab.
STOCKSCH	325	Stockbridge School of Agriculture	Vegetable Production	Related	Principles of sustainable production of vegetable crops. Topics include specific practices used for the major vegetable crops grown in New England, water and soil fertility management, season extenders, and crop rotation. Course intended for students who want to grow vegetable crops or work in the vegetable industry. With lab.
STOCKSCH	355	Stockbridge School of Agriculture	Community Food Systems	Related	This course examines the movement of food from seed to table. Participants explore local and global food systems, and specific food related issues that impact health of communities. Among the topics included are: examining the economic and political decisions that frame our food chain, direct marketing, commercial agriculture, processing, food justice, hunger, health, food security, peak oil, school food systems and school gardens, Community Supported Agriculture, farmers' markets, small scale farming and homesteading. At the center of this course is the examination of the opportunities and challenges required in making community food projects that create real lasting systems change. Community Food Systems requires participants to be motivated to develop meaningful projects in the community.
STOCKSCH	370	Stockbridge School of Agriculture	Tropical Agriculture	Related	Tropical regions of the world, their environment and classification; influence of climate, population, and socio-economic conditions on agriculture; major crops and cropping systems of sub-humid tropics; introduction to dry land agriculture; importance of rainfall and irrigation on productivity; green revolution; desertification; present and future research needs of region, and state of agricultural technology.
STOCKSCH	197PW	Stockbridge School of Agriculture	ST-Personal Wellness for Farmers and Gardeners	Related	This class will help to develop the skills and understanding of how to maintain a healthy lifestyle while being a successful farmer or gardener.
STOCKSCH	197S	Stockbridge School of Agriculture	ST-Soils Lab	Related	This class is specifically for those students who have already taken PLSOILIN 106, and who now wish to complete the lab component of the PLSOILIN 105 class that is required for all students completing the major or minor in this program.
STOCKSCH	297AL	Stockbridge School of Agriculture	ST-Agricultural Leadership and Community Education	Related	Learn to work with community groups and schools as a community educator.
STOCKSCH	297F	Stockbridge School of Agriculture	ST-Traditional Herbal Medicine Systems II	Related	An examination of indigenous medicinal systems from around the world to understand the choices of herbal medicines used by traditional healers and the similarities and differences in the approach of treatments. Students will be exposed to a wide range of cultures including Ayurvedic, Chinese, African, Middle Eastern, European, Central Asian, Native American, and Amazonian.
STOCKSCH	297K	Stockbridge School of Agriculture	Topics in Herbalism II	Related	This class introduces students to the depth and diversity of Herbalism, comparing different types of herbal practice, including phytotherapy, clinical herbalism, community herbalism, aromatherapy, flower essence/plant-spirit medicine, and homeopathy.
STOCKSCH	297W	Stockbridge School of Agriculture	ST-Herbal Approaches to Women's Health	Related	Use of medicinal herbs and foods for health and well being through all stages of a woman's life. Introduction to basic medicine making, anatomy and physiology of the female reproductive system.
STOCKSCH	298FS	Stockbridge School of Agriculture	USDA Farm Services Agency Practicum	Related	Participants will work under the direction of USDA Farm Service Agency personnel, providing assistance to the farm loan process, participating in government assistance programs, and working with USDA FSA outreach.
STOCKSCH	298G	Stockbridge School of Agriculture	Gardenshare Practicum	Related	This is a student-led practicum experience that utilizes a plot of land on campus to grow edible and ornamental crops. Although offered every semester, specific garden activities depend on the season of the year.
STOCKSCH	390VO	Stockbridge School of Agriculture	Vocational Agricultural Education Seminar	Related	This course is designed to prepare individuals for her/his first teaching assignment. The course will identify the characteristics of an effective teacher, as well as provide some of the tools required by first-year teachers to be successful. These include techniques for establishing effective classroom routines and procedures, student instruction and assessment, and for maintaining a positive classroom/shop climate that conveys high expectations. In addition, participants in the seminar will be able to identify the elements of a course /program curriculum and learn how to develop a lesson plan, assign and grade homework, and collaborate with colleagues to improve instruction, assessment, and student achievement.
STOCKSCH	397GF	Stockbridge School of Agriculture	ST-Global Food Systems	Related	This course covers social aspects of the agri-food systems as well as the political economy of food, agriculture and sustainability. Students are also encouraged to examine the cultural, ecological and economic implications of the ways food is perceived, produced and consumed. From rural development to the controversy of GMOs, from land conservation to the politics of globalization, from local food systems to global food justice, students use interdisciplinary perspectives to comprehend, analyze and visualize improved global and local food systems.
STOCKSCH	397PP	Stockbridge School of Agriculture	ST-Intro Plant Physiology	Related	Basic aspects of water relations and mineral nutrition in plants, plant biochemistry including photosynthesis, respiration and synthesis of important compounds, topics in plant growth and development such as growth regulators, photomorphogenesis and photoperiodism, and environmental physiology.
STOCKSCH	397SF	Stockbridge School of Agriculture	ST-Student Farm Management I: Planning for Production	Related	Students will learn how to create crop plans, establish markets, select cultivars, order seeds and supplies, and plan planting schedules.
STOCKSCH	398B	Stockbridge School of Agriculture	Agricultural Practicum	Related	No description available

STOCKSCH	398E	Stockbridge School of Agriculture	Farm Enterprise Practicum	Related	Guided practicum experience providing students with practical experience in growing crops, as well as managing and marketing these crops in support of their educational goals. Students will develop, use and evaluate crop plans including all aspects of production and marketing. Students will gain practical experience in management of soil fertility, water, and pests using IPM and organic methods. Weekly seminar and field work participation required.
STOCKSCH	H115	Stockbridge School of Agriculture	Honors College for STOCKSCH 115	Related	No description available
STOCKSCH	H120	Stockbridge School of Agriculture	Honors College for STOCKSCH 120	Related	No description available

Graduate Courses

Code	Course Number	Department	Course Title	Focused/Related	Description
ARCH	520	Architecture	Building Physics I	Focused	Studio and lecture. Energy conservation in contemporary residential construction. Emphasis on: energy efficient building materials, products and construction technology; alternative energy sources; passive solar design; environmental concerns, regulatory issues and building codes
ARCH	591S	Architecture	S-Sustainable & High Performance Facades	Focused	No description available
ARCH	597SD	Architecture	ST-Sustainable Design	Focused	No description available
BCT	520	Environmental Conservation	Energy and Buildings	Focused	This course serves both as an introduction to the physical processes lying behind the sustainable design of a building and as an initiation for the integration of technology in architecture.
BCT	550	Environmental Conservation	Construction Project Management	Focused	Introduces concepts of project management for design and construction, including initiation, planning, implementation, monitoring, control, closeout, documentation, scope, budget and scheduling, teamwork and communication, contracts and negotiation, and risk management.
BCT	597D	Environmental Conservation	ST-Sustainable Building & LEED Certification	Focused	The LEED Professional Credentials indicate professional excellence and a strong depth of knowledge as well as practical understanding of the LEED Rating Systems and how they apply to the high-performance design and construction of the built environment. Preparing to take the LEED Green Associate and AP exams requires more than taking one course; it is a process that involves acquisition of disciplinary knowledge and understanding of complex building and environmental systems. This course introduces core concepts of the USGBC LEED Rating Systems and assists students with study and preparation for the LEED Green Associate exam.
BCT	597E	Environmental Conservation	ST-Building Energy & Environmental Systems	Focused	No description available
BCT	597SD	Environmental Conservation	ST-Solar Energy Systems & Building Design	Focused	Introduces the fundamental concepts of solar building design and energy systems. Through project-based study and occasional field visits, students will explore the theory, technologies, applications, and benefits of solar design of buildings and discover how to utilize solar energy systems for residential and commercial buildings. Students will be required to research and document technology and complete a semester case study project in which they will examine various energy conservation aspects and economics underlying solar energy systems.
CE-ENGIN	509	Civil and Environmental Engineering	Transportation System Analysis	Focused	Introduction to transportation systems analysis and modeling as applied to the urban transportation planning process, multiple transportation modes, and the larger metropolitan environment.
CE-ENGIN	573	Civil and Environmental Engineering	Environmental Engineering Microbiology	Focused	Microbiological and biochemical properties of microorganisms important in environmental engineering practice. General fundamentals of microbiology and application to drinking water treatment and distribution, water pollution control, and natural systems.
CE-ENGIN	670	Civil and Environmental Engineering	Transport Processes in Environmental and Water Resources	Focused	Transport of fluids and constituents in environmental systems. Advection, diffusion, dispersion, zero and first-order reaction kinetics and equilibrium partitioning processes. Mathematical models solved with analytical and numerical methods. Multi-scale application to surface and subsurface waters and the atmosphere.
CE-ENGIN	671	Civil and Environmental Engineering	Environmental Biological Processes	Focused	The major biological phenomena and processes used in environmental engineering. Fundamentals of microbiology and biochemistry as applied to wastewater treatment, bioremediation drinking water treatment, and biological air pollution control.
CE-ENGIN	771	Civil and Environmental Engineering	Environmental and Resources Engineering Design - B	Focused	Selection, evaluation, and design of environmental and water resources engineering systems.
CE-ENGIN	597S	Civil and Environmental Engineering	ST-Transportation Sustainability	Focused	This course will cover concepts of sustainable transportation management strategies and policies. Among other topics, it will cover: life-cycle assessment for transportation infrastructure, vehicle emission estimation models, alternative fuel vehicles, non-motorized modes, and transit preferential treatments.
CE-ENGIN	697CC	Civil and Environmental Engineering	ST-Climate Impacts in New England	Focused	No description available
COMM	791K	Communication	S-Communication, Ecology, & Sustainability	Focused	As forms of communication contribute to the growing integration of the planet, the planet itself is threatened by unprecedented environmental and economic crises. This course will examine the way ecology and sustainability are mediated by communication technologies, institutions and texts within a wider context of geopolitics, political economy, social relations and subject formation. It draws on insights from allied fields like anthropology, geography, and sociology to develop an interdisciplinary approach to the social construction and political ecology of nature. Topics to be covered include global warming, biodiversity loss, and community versus neoliberal economies.
ECO	602	Environmental Conservation	Analysis of Environmental Data	Focused	This course provides students with an understanding of basic statistical concepts critical to the proper use and understanding of statistics in ecology and conservation science and prepares students for subsequent ECO courses in ecological modeling. The lecture (required for all ECO Master's level graduate students) covers foundational concepts in statistical modeling (emphasis is on conceptual underpinnings of statistics not methodology, with a focus on defining statistical models and the major inference paradigms in use today), basic study design concepts (emphasis is on confronting practical issues associated with real-world ecological study designs and statistical modeling), and lays out the 'landscape' of statistical methods for ecological modeling; emphasis is on the conceptual underpinnings of statistical modeling instead of methodology, with a focus on defining.
ECO	632	Environmental Conservation	Applied Multivariate Statistics for Environmental Conservation	Focused	This course provides students with a conceptual and practical understanding of the application of multivariate statistics in ecology and conservation science. Importantly, the conceptual development and organization of multivariate statistical techniques and the applications of these methods are presented strictly from an ecology and conservation science perspective. This course focuses on working with multivariate data (e.g., screening and adjusting multivariate data), evaluating grouped data (e.g., unconstrained and constrained ordination).

ECO	634	Environmental Conservation	Analys of Environ Data LAB	Focused	This laboratory course introduces the statistical computing language R and provides hands-on experience using R to screen and adjust data, examine deterministic functions and probability distributions, conduct classic one- and two-sample tests, utilize bootstrapping and Monte Carlo randomization procedures, and conduct stochastic simulations for ecological modeling. Specifically, lab focuses on learning the R language and statistical computing environment, which serves as the computing platform for all ECO statistics courses; emphasis is on learning fundamental R skills that will allow students to grow and expand their expertise in subsequent courses or on their own.
ECO	690E	Environmental Conservation	Environmental Conflict & Collaborative Policy	Focused	This course provides students with a conceptual and practical understanding of the application of multivariate statistics in ecology and conservation science. Importantly, the conceptual development and organization of multivariate statistical techniques and the applications of these methods are presented strictly from an ecology and conservation science perspective. This course focuses on working with multivariate data (e.g., screening and adjusting multivariate data), evaluating grouped data (e.g., unconstrained and constrained ordination).
ECO	691A	Environmental Conservation	S-Current Research in Environmental Conservation	Focused	Provides graduate students with a broad sampling of new and cutting-edge research related to environmental conservation to help foster critical thinking and provide a more expansive view of natural resources research. Seminars will be given by departmental faculty and faculty from other departments, both on campus and from other institutions. The seminars will be designed for both students who plan a research career and those who plan a more applied path. For the former, lecturers will include topics important for funding projects and publishing findings and for the latter, topics related to interpreting and applying results.
ECO	691VM	Environmental Conservation	S-Video Media for Communicating Science and Conservation	Focused	Today's society is more visual than ever before. The rapid expansion of the Internet in the 1990's followed by the proliferation of smartphones and tablets in the early 21st century have put people across the globe in front of screens not just capable of text and photos, but video media as well. Science and nature are facets of our world that lend themselves well to this "video media revolution." Video media can transform the complexities of science and nature into something more tangible and tractable. As a greater awareness of sustainability becomes global, how can the "video media revolution" be used to deliver an authentic and accurate message that is both educational and entertaining? Can video media in a diversity of forms be used to positively affect change in they way human societies respond to scientific discoveries and environmental urgencies? In this discussion-based course, we will examine how video media can be effectively used to enhance communication in science and conservation, ranging from fundraising to affecting public policy.
ECO	697A	Environmental Conservation	ST-Conservation Biology I	Focused	No description available
ECO	697J	Environmental Conservation	ST-Ecology of Diadromus Fishes	Focused	No description available
ECO	697P	Environmental Conservation	ST-Natural Resources Policy and Administration	Focused	The fundamental actors and institutions in the process of public natural resource policy formation at the state, national, and international levels. Focusing on forestry, wildlife, and fisheries, the role of significant laws, resource management agencies, interest groups, and judicial decisions.
ECO	697PS	Environmental Conservation	S-Perspectives on Sustainability	Focused	No description available
ECO	697SA	Environmental Conservation	ST-Advanced Statistical Ecology	Focused	This course explores statistical problems beyond the classical linear models including mixed effects, non-normal error distributions, autocorrelations, etc. Hierarchical models, including explicit observer effects, will also be considered.
ECO	697UW	Environmental Conservation	ST-Urban Wildlife Ecology Management	Focused	Urbanization constitutes one of the greatest challenges of this century. Urban ecology is emerging as a critical transdisciplinary field, integrating the life sciences, geosciences, and social sciences to understand and manage effects of urbanization on ecosystems. In addition, urban areas provide unique opportunities for studying rapid evolutionary and behavioral changes induced by novel ecosystems and the role of humans in altering species interactions. This course will examine the emerging complexity of biotic interactions in the city, focusing on dynamics at the levels of populations, species and, communities.
ECO	697WE	Environmental Conservation	ST-Wind Energy: Environmental Assessment, Monitoring, & Regulatory Requirements	Focused	No description available
ECO	698S	Environmental Conservation	Sustainability Science Practicum	Focused	No description available
ECO	797P	Environmental Conservation	ST-Population & Community Ecology	Focused	No description available
EHS	565	Environmental Health Science	Environmental Health Practices	Focused	Concepts of control methods used by environmental health and engineering practitioners. Topics include water, wastewater, solid wastes, food sanitation, vector control, housing, and accident control measures.
EHS	667	Environmental Health Science	Environmental and Occupational Toxicology I	Focused	The toxicological activity of toxic substances found in the general environment and in industrial settings. Topics include biochemical mechanisms for absorption, excretion, tissue distribution, metabolic transformations, and conjugations; comparative metabolism of animal species; special applications to the toxicology of heavy metals, pesticides, and other industrial chemicals.
ENVIRDES	575	Landscape Architecture and Regional Planning	Environmental Law and Resource Management	Focused	Concepts of nuisance, police power, zoning, eminent domain, and growth management. Their application to management of environmental resources, including riverine, coastal, and wetland areas. Includes introduction to legal research
ENVIRDES	591B	Landscape Architecture and Regional Planning	S-Sustainable Cities	Focused	No description available
ENVIRDES	597A	Landscape Architecture and Regional Planning	ST-Computers In Environmental Design	Focused	Introduction to the range of computer applications available for the environmental design professions. Site analysis techniques, computer aided design, and methods of data management on the computer.
ENVIRSCI	504	Environmental Science	Air Pollution and Climate Change Biology	Focused	Focus on the biological effects of known air pollutants, such as ozone, sulfur dioxide, fluoride, heavy metals, organics, particulates, pesticides and endocrine disruptors. Includes methods of study and use of bioindicators and biomarkers. Contemporary concerns, such as increased ultraviolet B radiation from atmospheric ozone depletion, increasing carbon dioxide levels, and the "greenhouse effect" also considered.
ENVIRSCI	590A	Environmental Science	Environmental Soil Science	Focused	An examination of the basic physical, chemical, and biological properties of soil with emphasis on environmental science and natural resource applications. Soil's natural role in biome structure, nutrient cycling, water purification, and carbon storage will be explored. Processes important to soil and groundwater pollution (subsurface movement, attenuation, and remediation) will be discussed. Special attention given to wetland soil processes and the identification of hydric soils in the landscape. The society today - such as food security, adequate clean water, climate change, biodiversity conservation, and waste disposal. Some out-of-class field exercises are required.
FOOD-SCI	542	Food Science	Food Chemistry	Focused	Chemistry of food minor components (e.g. minerals, vitamins, nutraceuticals, colors, flavors), direct food additives (e.g. preservatives, texture modifiers and stabilizers, colors, flavors), incidental food additives (e.g. processing aids, chemical toxins), intentional adulterants, allergens, etc.
GEO-SCI	519	Geosciences	Aqueous Environmental Geochemistry	Focused	Chemical processes affecting the distribution and circulation of chemical compounds in natural waters. Geochemistry of precipitation, rivers, lakes, groundwater, and oceans; applications of thermodynamic equilibria to predicting composition of aqueous systems. Behavior of trace metals and radionuclides in near surface environments. With lab.
GEO-SCI	591CM	Geosciences	S-Introduction to Climate & Environmental Modeling	Focused	No description available

GEOGRAPH	592M	Geosciences	S-Computer Mapping	Focused	No description available
GEOGRAPH	697G	Geosciences	ST-Geography, Policy & the Environment	Focused	This is a mixed undergrad/grad class that examines the ways our lives, places and environments are organized by policies and law, and the underlying economic, cultural and political reasons we have shaped policies and laws in the ways we have. We examine the structures and background history of law and policy often taken for granted, from the role of private property in American development to national forest "sustained yield" policies to the politics of waste and recycling, and we trace forward their tangible impacts on human communities and the environmental landscape. The main focus of the course is the United States. A key goal is to uncover different ways geography, policy and environment have been organized differently for the environment and for people. In the process, we will open up a wider range of options for human-environment relations than normally imagined and think through some of their possibilities
HISTORY	691N	History	S-Conservation of Nature & Culture	Focused	This course will explore the history of various efforts around the world to conserve nature and culture. Students will learn about the history of the Conservation Movement in North America, but also to think broadly about what the idea of conservation means in archeology, folklore, historic preservation, and the fine arts, especially in a time of globalization and climate change.
LANDARCH	582	Landscape Architecture and Regional Planning	Landscape and Green Urbanism	Focused	Interdisciplinary seminar for upper level undergraduate and graduate students. Focus on the role of the built environment in urbanization and sustainability. Substantial weekly readings/discussions and 2 research/synthesis papers required.
LANDARCH	662	Landscape Architecture and Regional Planning	Cultural Heritage Policy and International Sustainability Practice	Focused	This course is a comprehensive introduction to the evolution of heritage conservation theories and practices at the international level, particularly focusing on sustainability and the urban environment.
LANDARCH	591I	Landscape Architecture and Regional Planning	Sustaining Green Infrastructure Planning and Design	Focused	No description available
LANDARCH	591K	Landscape Architecture and Regional Planning	S-Green Infrastructure and Performance Monitoring	Focused	The seminar will focus on Green Infrastructure theory and best practices. Sessions will discuss readings and hear presentations on individual research by students. Grade based on class participation, and individual green infrastructure research project.
LANDARCH	692F	Landscape Architecture and Regional Planning	S-Computers in Environmental Design	Focused	No description available
LANDARCH	695F	Landscape Architecture and Regional Planning	S-Campus Green Infrastructure	Focused	This class will explore the integration of green infrastructure into the campus landscape and strategies for effectively managing storm water.
LEGAL	494DI	Legal Studies	Environmental & Public Policy Dispute Resolution	Focused	This course examines multiparty disputes involving topics such as land use management, water rights, e-healthcare, and pollution remediation. We explore dispute resolution's role in enhancing democratic participation in decision making of public import. Satisfies the Integrative Experience requirement for BA-Legal majors.
LEGAL	497N	Legal Studies	Environmental Justice	Focused	This course examines the U.S. environmental justice (EJ) movement. Central to our study is: environmental degradation and pollution and their relationship to racism and poverty; as well as globalization's effect on international EJ. We critically analyze multiparty disputes considering the role of grassroots activism, the law, and ADR in the redress of environmental injustice. Coursework relies on relevant scholarship, case studies, and a site visit.
M&I-ENG	551	Mechanical and Industrial Engineering	Thermal Environmental Engineering	Focused	Senior design course on energy use in buildings. Psychometrics, comfort conditions, heating and cooling loads for buildings. Heating, ventilation, and air conditioning equipment design and selection. Energy recovery and conservation methods.
M&I-ENG	570	Mechanical and Industrial Engineering	Solar&Dir Enrgy Conv	Focused	Review of engineering principles of solar energy conversion including collection techniques, thermal and direct conversion, system performance prediction, and selected topics.
M&I-ENG	573	Mechanical and Industrial Engineering	Engineering Windpower Systems	Focused	Engineering aspects of windpower systems including aerodynamic analysis, mechanical design, support structure design, wind field analysis, system concepts and analysis, and economics.
M&I-ENG	674	Mechanical and Industrial Engineering	Offshore Wind Energy Systems	Focused	Students will become experts in offshore wind energy systems, including the technical aspects and the social, environmental, and economic issues.
MARKETING	591C	Marketing	S-Marketing for Sustainable Business	Focused	No description available
MICROBIO	680	Microbiology	Advanced Microbial Physiology	Focused	The main aspects of bacterial growth, including energy metabolism, biosynthesis of macromolecular precursor materials and their assembly into macromolecules, and the integration of these processes by various regulatory mechanisms. Emphasis on the isolation of mutant bacteria blocked in key cellular functions and on global control systems governing the adaptation of bacteria to different environmental conditions.
NATSCI	590B	College of Natural Sciences	Introduction to Interdisciplinary Science	Focused	An introduction to, and details of, advanced nanotechnology and imaging tools used in the physical sciences. An explanation of how these analytical tools (using advanced microscopy, molecular spectroscopy, and medical imaging) can be used to solve problems concerning the biophysical aspects of membrane dynamics with lipid signaling and cell biology. The diversity and complexity of membrane morphology and functions in the context of different physiological and pathological conditions will be emphasized.
NATSCI	597B	College of Natural Sciences	ST-Environmental Science Research	Focused	No description available
NATSCI	697J	College of Natural Sciences	ST-STEM Digital: Imaging for Environmental Research	Focused	No description available
NRC	521	Environmental Conservation	Timber Harvesting	Focused	Components of timber harvesting systems; felling, bucking, primary and secondary transport. Integration of components into efficient, safe, and cost-effective harvesting systems. Lab: case studies of harvest operations in the field.
NRC	540	Environmental Conservation	Forest Resources Management	Focused	Use of forests to meet multiple objectives. Summary of forest history, policies, programs and review of traditional and contemporary forest management principles and practices. Case examples, site visits and reports, interaction with practitioners and landowners, term project and presentation.
NRC	541	Environmental Conservation	Urban Forest Management	Focused	No description available
NRC	549	Environmental Conservation	Ecosystem Management	Focused	Ecosystem management and how it is defined by various organizations. The historical context and key contributing ecological concepts of ecosystem management and alternative approaches for its implementation.
NRC	565	Environmental Conservation	Dynamics & Management Of Wildlife Populations	Focused	Basic techniques and concepts of the management and population dynamics of wildlife populations; emphasis on estimating animal population parameters, development of population growth models, and principles of population management. Includes field and laboratory techniques for estimating population parameters for wildlife.
NRC	577	Environmental Conservation	Ecosystem Modeling & Simulation	Focused	Modeling and analysis used to understand the complexities of natural systems. System representations, modeling, experimentation, optimization, and policy modeling. Computer modeling using Stella and GIS.
NRC	579	Environmental Conservation	Cree Culture, Natural Resources, & Sustainability	Focused	Interdisciplinary course combines reading and group discussions, a winter camping trip with a Cree family in northern Quebec, and an individual term project to explore Cree culture, natural resources, and issues of sustainability, stewardship of the environment, and social justice.

NRC	580	Environmental Conservation	Conservation Genetics	Focused	This course provides the genetic basis for solving conservation problems. Major topics include application of molecular genetic techniques to conservation problems and fundamentals of population genetics.
NRC	590GC	Environmental Conservation	Global Change Ecology	Focused	As a species, humans have a remarkable footprint on global ecosystems. We change land cover, alter water and nutrient cycling, introduce non-native species, harvest natural resources, and change the global climate. This class will explore the impacts of these changes on a variety of ecosystems, as well as consider how natural resource management can improve ecological resistance and resilience to change.
NRC	590RE	Environmental Conservation	Restoration Ecology	Focused	Restoration ecology is the returning of damaged ecosystems or particular properties of a desired state of ecological health. For purposes of this course, this field can be divided into four topics: 1) remediation of damaged sites where no return to original conditions is possible (e.g. strip-mined sites), 2) restoration of missing natural processes (fire, flood cycles, etc.), 3) return of missing native species or protection of declining native species, and 4) elimination or management of damaging invasive species. Skills for preparation of goals and implementation plans for individual sites will be developed. At the landscape level, knowledge of wildlife restoration, as well as use of tools for management of damaging invasive species (including especially the role of biological control) will be explored.
NRC	597CB	Environmental Conservation	ST-Conservation & Animal Behavior	Focused	This course will focus on the application of knowledge of animal behavior in order to solve wildlife conservation problems. Students will learn about how theory and data gathered through traditional and new techniques in animal behavior and behavioral ecology can be used to understand the impact of ongoing threats such as habitat fragmentation, over harvesting, invasive species, and climate change to biodiversity. The course will include local as well as global examples. A background in evolution and genetics will be helpful.
NRC	597ED	Environmental Conservation	ST-Environmental Decision-Making and Communication	Focused	This course explores research and practice at the intersection of psychology and environmental conservation. Topics covered include: environmental decision-making; behavior change; barriers to and facilitators of conservation behavior; effective interventions design; persuasive and strategic environmental communication. Students will learn key factors influencing decision-making around conservation and sustainability.
NRC	597EL	Environmental Conservation	ST-Environmental Law	Focused	No description available
NRC	597ES	Environmental Conservation	ST-Ecosystem Science	Focused	Studies of ecosystems focus on units of the landscape in terms of productivity, nutrient cycling, hydrology, and response to disturbance. How plant physiology, soil biology and biochemistry, and energy transformations interact to create the dynamic behavior of ecological systems. Examples focus on terrestrial landscapes and comparisons of managed and un-managed systems.
NRC	597SA	Environmental Conservation	ST-Sustainable Aquaculture	Focused	No description available
NRC	597WC	Environmental Conservation	ST-Wildlife Corridors for Conservation	Focused	This course will provide students with foundational concepts of wildlife connectivity and corridors. A broad survey of the methods used to quantify connectivity and model corridors for wildlife, including the pros and cons of each method will be presented. Through case studies, students will come to appreciate the complexities of site-based corridor conservation and management, and will learn about various strategies employed around the globe for conserving wildlife corridors
NUTRITN	572	Nutrition	Community Nutrition	Focused	Skills and techniques needed to effectively carry out community nutrition programs and nutrition education, including knowledge of agencies and programs, community assessment, legislation, nutrition education, and working with people.
ORG&EVBI	697B	Organismic and Evolutionary Biology	ST-Ecology & Evolutionary Biology	Focused	No description available
ORG&EVBI	790E	Organismic and Evolutionary Biology	OEB Ecology Core Course	Focused	Foundation course required for all OEB graduate students along with OEB Evolution Core Course. Graduate level topics covering ecology of individuals, populations, communities and spatial patterns. Laboratory sessions include problems sets, data manipulation and computer exercises to provide practice with quantitative methods in ecology.
PUBHLTH	567	Public Health	Environmental Compliance Regulations	Focused	Principles of environmental compliance obligations, common law, trespass, nuisance, and negligence. The major federal environmental laws affecting companies and agencies, and selected state and local regulations. Civil and criminal penalties and liabilities attached to environmental regulations. Strategies for compliance including proactive and environmental management as a method for reducing legal exposure to environmental issues.
PUBP&ADM	497MS	Public Policy and Administration	ST-Applications in Do-it-Together, Environmental Monitoring Technologies	Focused	In this class, students will meet and form teams to identify an environmental monitoring project they would like to design and implement. After projects are identified, we will use weekly class sessions for roll-up your sleeves working sessions on these projects. In these sessions you will (1) utilize online educational material to learn the technologies needed to build your device; (2) work iteratively, to develop and test a project prototype; and (3) (hopefully) develop a working system.
PUBP&ADM	697B	Public Policy and Administration	ST-Introduction to GIS	Focused	The goals of this course are to teach you basic GIS concepts such as spatial data sources and structures, projections and coordinate systems, geospatial analysis, cartographic modeling, and the integration of remote sensing and GIS. By the end of the course, students will be proficient in ESRI ArcGIS software.
PUBP&ADM	697EC	Public Policy and Administration	ST-Economics of Climate Change	Focused	This course will examine tools from economics as they relate to three timely environmental issues: climate change, oil spills and the 40th anniversary of the passage of the Clean Air Act. The environmental economics tools we will cover in depth include: dynamic optimization, non-market valuation and estimation of treatment effects. This is not a survey course, but rather one that will cover a limited number of topics in depth. There are two learning objectives for this course. First, you will learn how statistical tools can be used for economic analysis. Second, you will be able to describe how economic theory informs empirical analysis. We will specifically focus on measuring outcomes, identifying causal relationships between economic factors and environmental and social outcomes, and valuing those outcomes.
PUBP&ADM	697EV	Public Policy and Administration	ST-Environmental Policy	Focused	No description available
REGIONPL	558	Landscape Architecture and Regional Planning	Issues in Environmental Planning	Focused	Alternative administrative arrangements for dealing with problems of environmental management and control at various levels of government.
REGIONPL	580	Landscape Architecture and Regional Planning	Sustainable Cities	Focused	This course introduces students to the 3-E concept of sustainability: environment, economy, equity, and applies it to the built environment and policies at the municipal and regional level.
REGIONPL	587	Landscape Architecture and Regional Planning	People and the Environment: Applications of Environmental Psychology Research to Planning and Design	Focused	Interdisciplinary seminar on the applications of environmental psychology research to planning and design. Topics include landscape preference, territoriality and defensible space, way finding, and restorative settings/therapeutic gardens.
REGIONPL	658	Landscape Architecture and Regional Planning	Planning for Climate Change	Focused	This seminar reads some of the most current literature on the future of the urban form given climate change, and allows time and shared space to reflect on what these coming changes mean for (primarily local) government as well as governance. The class focus will be on implications of these coming conditions for built form both now and in the future, with a goal of developing a working understanding of what municipal, regional, and state planners and policymakers need to know now about these conditions to provide leadership to communities.

REGIONPL	5911	Landscape Architecture and Regional Planning	S-Sustaining Green Infrastructure Planning and Design	Focused	No description available
RES-ECON	720	Resource Economics	Environmental & Resource Economics	Focused	Economics of environmental quality and natural resource management; theory of externalities, public goods, and resource extraction. Benefit-cost analyses of natural resource use and preservation of unique resources.
RES-ECON	721	Resource Economics	Advanced Natural Resource Economics	Focused	Economic models of renewable and nonrenewable natural resources; introduction to dynamic optimization; and the theory of environmental policy.
STOCKSCH	510	Stockbridge School of Agriculture	Management & Ecology of Plant Diseases	Focused	The ecology of plant, microbe, and human interactions in plant diseases, from wilderness to industrial farms. Epidemics, traditional farming, environmental impacts and sustainability issues. Ways in which agriculture, particularly plant production and plant disease management, change ecosystems. Independent project.
STOCKSCH	575	Stockbridge School of Agriculture	Environmental Soil Chemistry	Focused	Fundamental chemical concepts/processes in soils, such as ion exchange, precipitation/dissolution, redox reactions, partitioning and adsorption, and solution speciation and nature of soil minerals and organic matter. Computer models used to examine current environmental, agricultural, and engineering problems. Examination of how chemical processes affect fate, transport, availability, and remediation of trace elements, heavy metals and organic contaminants in soils and sediments. Discussion on current environmental issues and problems.
STOCKSCH	590B	Stockbridge School of Agriculture	Project Development in Sustainable Food and Farming	Focused	Introduces students to the process of developing a professional project in the area of sustainable food and farming. Requires synthesis and integration of knowledge and experience, and the application of theory and principles in a situation that approximates professional practice. Results in a research paper and a poster that provides a culminating experience for seniors or an introduction to research for new graduate students.
STOCKSCH	597A	Stockbridge School of Agriculture	ST-Phyto/Bioremediation	Focused	This course will cover the various aspects of phytoremediation - the use of plants (both natural hyper-accumulators and transgenic) and their associated microbes with the purpose of environmental clean-up of contaminated soil, sediments and water. Various strategies for phytoremediation of a wide range of toxic pollutants, both organic and elemental, with a special emphasis on toxic metals will be discussed.
STOCKSCH	691B	Stockbridge School of Agriculture	S-Climate, Energy, Biochar & Agriculture	Focused	No description available
STOCKSCH	691S	Stockbridge School of Agriculture	S-Research in Sustainable Soil Management	Focused	This journal club will explore current research relating to sustainable soil health and nutrient management. Topics will include developments in cover cropping systems, soil biology and metagenomics, biochar, weed suppression, and soil nutrient management.
STOCKSCH	697PB	Stockbridge School of Agriculture	ST-Phyto/Bioremediation	Focused	This course will cover the various aspects of phytoremediation - the use of plants (both natural hyper-accumulators and transgenic) and their associated microbes with the purpose of environmental clean-up of contaminated soil, sediments and water. Various strategies for phytoremediation of a wide range of toxic pollutants, both organic and elemental, with a special emphasis on toxic metals will be discussed.
SUSTCOMM	574	Landscape Architecture and Regional Planning	City Planning	Focused	Introduction to city and regional planning and the urban planning profession. The role the planner plays in addressing the wide range of problems and opportunities, city or regional, that now, or may in the future, confront America's modern urban environment.
ARCH	597SB	Architecture	ST-Sustainable Buildng Systems	Focused	No description available
ENVIRDES	553	Landscape Architecture and Regional Planning	Resource Policy and Planning	Focused	Examination of natural resource policy formation and the planning process at the local, state, and regional levels; the role of congress, the bureaucracy, and citizens' interest in policy formation; the interplay among forces of economics, technology, ecology, and design in the determination of policy goals and planning horizons.
MICROBIO	562	Microbiology	Environmental Biotechnology	Focused	Traditional and molecular methods strategically applied to problems related to microbial biotechnology and environmental microbiology. Ranges from the diversity of microbial life to biodegradation. Seven general areas emphasized: 1) Statistical sampling and site characterization, 2) biomass determination, 3) enrichment techniques, 4) microbial activity measurements, 5) single cell detection in situ, 6) sequence and phylogenetic analysis followed by probe design, and 7) other modern techniques of environmental microbiology.
POLISCI	794J	Political Science	S-International Environmental Politics	Focused	No description available
BCT	530	Environmental Conservation	Mechanics of Building Materials for Construction	Related	Introduction to the mechanical behavior of building materials for students of construction technology and architecture. Basic structural concepts, including statics and strength of materials, are addressed in a practical hands-on manner.
BCT	597BM	Environmental Conservation	Problem Solving in Building Mechanics	Related	No description available
BCT	597F	Environmental Conservation	ST-Bio-Based Building Lab	Related	No description available
BCT	597S	Environmental Conservation	ST-Building a Quick Convincing Business Plan	Related	No description available
BIOLOGY	597M	Biology	ST-Endocrine Disruptors in the Marketplace	Related	The goal of this course will be to provide a structured and mentored student-based investigation of the impacts of Endocrine Disruptors on human health, the regulatory environment that has overseen the proliferation of these chemicals, and market-based strategies for empowering consumers to make informed choices.
CE-ENGIN	523	Civil and Environmental Engineering	Ground Improvement & GeoConstruction	Related	Engineered ground improvement; slurry trenches, dewatering systems; grouting; deep dynamic compaction, vibro compaction; stone columns; wick and vertical sand drains. Emphasizes basic principles and design methodology.
CE-ENGIN	560	Civil and Environmental Engineering	Hydrology	Related	A quantitative account of elements of the hydrologic cycle, including precipitation, evapotranspiration, snowmelt, infiltration, and surface runoff. Basic laws from such various disciplines as physics, chemistry, meteorology, astronomy, fluid mechanics, and thermodynamics, combined into simple mathematical descriptions used in the hydrologic design process.
CE-ENGIN	577	Civil and Environmental Engineering	Surface Water Quality Modeling	Related	Evaluation and control of water quality in streams, lakes, and estuaries. Mathematical analyses of patterns of water movement and their relation to water quality. Total Maximum Daily Load (TMDL) allocation design.
CE-ENGIN	579	Civil and Environmental Engineering	Air Quality	Related	The course examines the sources, fate, transport, and control of the major categories of air pollutants. Topics include: sources and characteristics of air pollutants; atmospheric chemistry and physics; effects of air pollutants on human health and the environment; global climate change; atmospheric dispersion modeling; and design of systems for the control of gaseous and particulate air pollutants.
CE-ENGIN	672	Civil and Environmental Engineering	Physical & Chemical Treatment Process	Related	Fundamentals of physical and chemical processes used in environmental engineering. Applications include processes used in the treatment of drinking waters, industrial waters and wastewaters, municipal wastewaters, and hazardous waste remediation. With lab.
CE-ENGIN	680	Civil and Environmental Engineering	Water Chemistry	Related	Chemical equilibrium principles of acids-bases, dissolution-precipitation, oxidation-reduction, and complexation applied to understanding the chemistry of surface waters, groundwaters, and water and wastewater treatment.
CE-ENGIN	597GW	Civil and Environmental Engineering	ST-Groundwater	Related	Hydrology, geology, chemistry, and engineering design of groundwater systems. Topics include groundwater and the hydrologic cycle, groundwater hydraulics, groundwater as a resource, natural groundwater chemistry, groundwater contamination and remediation. Includes a project involving simulation of groundwater flow with numerical models.
CE-ENGIN	692A	Civil and Environmental Engineering	Environmental Engineering Seminar	Related	Presentations by the graduate student of selected current literature and research. Visiting lecturers.
CE-ENGIN	697P	Civil and Environmental Engineering	ST-Process Lab	Related	No description available

CE-ENGIN	697W	Civil and Environmental Engineering	ST-AdvTop/WaterChem&ProcEngin	Related	No description available
CE-ENGIN	697X	Civil and Environmental Engineering	ST-Advanced Topics in Environmental Engineering	Related	No description available
COMM	691B	Communication	Sem-Media Theories	Related	Introductory survey of media theory and research. Examines a range of perspectives on media communication, including the history of "mass society" as a concept in social thought and the evolution of communication technologies and strategies that may no longer be adequately termed "mass media." Comparison and critique of theoretical approaches and research traditions (including media influence and effects, political communication, theory, functionalism, critical theory, postmodernism, feminism), toward understanding both difference and convergence in theory, method and effects.
ECO	601	Environmental Conservation	Research Concepts	Related	Introduction to the research process in the natural resources sciences. Focus on research philosophy, concepts, and design, progressing from development of hypotheses, questions, and proposals, to grants and budgeting, and delivery of such research products as reports, publications, and presentations.
ECO	692B	Environmental Conservation	S-Qualitative Data Analysis	Related	This seminar will introduce students to the theory and practice of analyzing qualitative data in social science research about the environment. The course is oriented around exploratory and interpretative analytic approaches to interview and focus group data. Students will learn to use computer software (Nvivo) to analyze qualitative data they have collected as part of fieldwork projects and will use their analyses in formulation and writing of a research paper.
ECO	697AB	Environmental Conservation	ST-Applied Biostatistics	Related	Intermediate statistics illustrated using examples from ecology. Topics include ANOVA, linear regression (simple and multiple), correlation, logistic regression, contingency tables and nonparametric methods. Techniques discussed in lectures and applied in laboratories.
ECO	697MP	Environmental Conservation	ST-Coastal Marine Spatial Plan	Related	No description available
ECO	697SB	Environmental Conservation	ST-Studies in Building Information Modeling	Related	No description available
ECO	697SV	Environmental Conservation	ST-Design, Implementation, & Analysis of Surveys of People	Related	At the end of this course, students should have all of the basic skills to successfully design, implement, and analyze a survey. Although the content of the course will have a natural resources focus, the principles will be applicable to all surveys of people. After an overview of the survey process, the class will discuss the different types of surveys and their relative strengths and weaknesses. Next, the class will study the Dillman? method for designing surveys. The practical elements of implementing a survey, including the Internal Review Board process, will be discussed. Data processing, storage, and validation will be covered. Finally, both basic and advanced analytical techniques, using the R statistical package, will be investigated.
ECO	697UF	Environmental Conservation	ST-Urban Forestry	Related	This course introduces concepts related to the management of urbanized landscapes, focusing on what comprises the urban forest, its function as a natural system and the value of urban forests as an environmental and social catalyst. Examination of what makes up the urban forest, how these components function and the importance of sustainable urban natural landscapes will be undertaken. This seminar course will focus on developing a comprehensive understanding of the natural, social, economic and political aspects of protecting, enhancing and maintaining urban forests in populated communities.
ECON	702	Economics	Game Theory & Strt Intrc	Related	Addresses contemporary issues in game theory and the microfoundations of economic institutions.
ECON	709	Economics	Political Economy II	Related	Presents the leading and contending Marxian theories of society and knowledge. Class and value analysis of capitalist institutions, markets, and economy stressed. Comparison between capitalist and non-capitalist societies examined.
ECON	710	Economics	Political Economy III	Related	Current issues in political economy, focusing on race and gender inequalities. Consideration of Marxian, feminist, institutionalist and neoclassical approaches. Some attention to empirical and econometric research.
ECON	765	Economics	Economic Development - Struct Prob	Related	Concept of economic development and structural changes needed in underdeveloped countries to permit development. Prerequisite: 15 hours of economics.
ECON	802	Economics	Hist&Dvlpmnt Workshop	Related	No description available
ENVIRDES	544	Landscape Architecture and Regional Planning	Historical Architecture and Landscape II	Related	No description available
ENVIRDES	547	Landscape Architecture and Regional Planning	Landscape Pattern and Process	Related	First half of the semester: past and current forces, with a focus on those which affect land uses, the people and the environment. Second half: the responses of planners and designers to those forces. Landscape patterns resulting from interactions of biotic, abiotic, and cultural resources and processes over time. Understanding these dynamics as a prerequisite to appropriate planning and design interventions.
ENVIRDES	591A	Landscape Architecture and Regional Planning	S-Roots & Branches of 20/21st Century	Related	No description available
ENVIRSCI	515	Environmental Science	Microbiology of the Soil	Related	Microbial processes in the soil and sediment environments. The ecology of the various microbial communities; the decomposition of organic matter, carbon transformations, nitrogen, sulfur, phosphorus, and other mineral transformations; chemistry of these reactions and their biogeochemical implications; biological equilibrium, the rhizosphere, and microbial associations. Prerequisites: basic biology and organic chemistry.
FOOD-SCI	561	Food Science	Food Processing	Related	This course will introduce students to the fundamentals of product development as well as current topics and concerns in the food industry. Student teams will develop a food product from concept to production. This project will incorporate the student?s knowledge in chemistry, engineering, microbiology as well as social sciences. A market analysis will involve investigation of current food movements and health concerns. Students will also learn basic engineering concepts in order to produce their product in a pilot scale-plant.
FOOD-SCI	575	Food Science	Elements of Food Process Engineering	Related	Topics include: unit conversion, mass and energy balance, fluid flow, heat transfer, refrigeration, evaporation, drying.
FOOD-SCI	580	Food Science	Food Borne Diseases	Related	Principal microbiological agents responsible for food-borne diseases: their classification, physiology, epidemiology, pathogenesis, identification, and control and case histories.
FOOD-SCI	581	Food Science	Analysis Food Products	Related	Physical, chemical, and spectroscopic techniques in food analysis: proximate analysis, extraction, densimetry, spectroscopy, rheology, microscopy, refractometry, polarimetry, chromatography, enzymatic and immunological assays, and sensory evaluation methods emphasizing theoretical basis of measurements and laboratory calculations.
FOOD-SCI	720	Food Science	Biosensors: Principles & Applications	Related	Biosensors can be applied to many practical applications. They have been designed to detect analytes such as blood glucose, biowarfare agents and food pathogens. This course will cover the principles of biosensor design including biorecognition elements, transduction elements and micro/nanofabrication. A review of current journals will give an understanding of the latest technologies. A final project will require the design of a biosensor for a given analyte in a sample matrix.
FOOD-SCI	792A	Food Science	Sem-Food Science	Related	No description available
FOOD-SCI	797 M	Food Science	ST-Topical Problems in Food Microbiology	Related	No description available
FOOD-SCI	797S	Food Science	ST-Nanotechnology/Food Safety	Related	No description available

GEO-SCI	517	Geosciences	Sedimentary Geochemistry	Related	Applications of geochemistry to the study of modern sedimentary environments and sedimentary rocks. Geochemistry of carbonates and evaporites. Use of stable isotopes in paleoenvironmental analysis. Oxidation-reduction processes and their significance for iron formations. Geochemical transformations during burial of sedimentary sequences and the formation of petroleum. With lab, field trip.
GEO-SCI	555	Geosciences	Making Dynamic Digital Maps	Related	No description available
GEO-SCI	587	Geosciences	Hydrogeology	Related	Basic principles of theoretical and practical hydrogeology. Topics include the hydrologic cycle, principles of groundwater flow, groundwater hydraulics, occurrence of groundwater in geologic materials, aquifer analysis, field methods, introduction to groundwater modeling, and chemistry of groundwater. With lab.
GEO-SCI	615	Geosciences	Organic & Biogeochemistry	Related	The cycling and distribution of "life elements" (C, O, N, S, P) and compounds in modern and ancient marine and terrestrial settings. Emphasis on the transfer of compounds from the biota to their surroundings. Topics include: anthropogenic influence on biogeochemical cycles, importance of microbes in geochemistry, utility of bio-markers in reconstructing paleoecosystems and paleoenvironments.
GEO-SCI	687	Geosciences	Advanced Hydrogeology	Related	Advanced groundwater hydrology and contaminant hydrogeology. Includes the application of field techniques, analysis of field data, and use of analytical and numerical models in the investigation of groundwater problems. Introduction to Visual MODFLOW and other groundwater models, including development of conceptual models from geologic data, laying out grids handling boundaries, sources and sinks, transience, calibration and sensitivity.
GEO-SCI	701	Geosciences	Professional Seminar	Related	Results of new research by students, faculty, and visitors.
GEO-SCI	787	Geosciences	Hydrogeology Seminar	Related	Review and discussion of current research in hydrogeology, environmental soil and water sampling, groundwater chemistry, analytical and numerical modeling, isotope hydrology, fluid flow in fractured rock, surface and borehole geophysics, geostatistics, environmental monitoring and remediation, and related topics.
GEO-SCI	821	Geosciences	Petrology Seminar	Related	Literature of igneous and metamorphic petrology and related aspects of mineralogy.
GEO-SCI	831	Geosciences	Structural Geol Sem	Related	Review and discussion of current literature in the fields of structural geology and tectonics. Prerequisite: at least one graduate course in structural geology.
GEO-SCI	593P	Geosciences	S-Biogeochemistry	Related	No description available
GEO-SCI	691Q	Geosciences	Internatnl Quaternary Seminar	Related	No description available
GEO-SCI	797A	Geosciences	ST-Developing a Research Proposal	Related	No description available
GEOGRAPH	604	Geosciences	Geographic Theory and Analysis	Related	Advanced survey of the development of theoretical and analytical approaches in geography emphasizing philosophy of science and current approaches and methodologies. Practical discussions and exercises in framing research projects, and proposal, grant, and thesis writing. Students lead discussions in their areas of specialization. Primarily for entering graduate students in Geography.
GEOGRAPH	658	Geosciences	Paleoclimatology	Related	Methods used in reconstructing climate before the period of instrumental records and their application in understanding late Quaternary climatic fluctuations. Topics include dating methods, ice core studies, palynology, ocean core studies, terrestrial geological and biological studies, dendroclimatology, and historical climatology.
GEOGRAPH	668	Geosciences	GIS and Spatial Analysis	Related	Introduce the concepts and principles of GIS. Both theoretical and applied realms of GIS are emphasized in this course. Some important spatial analysis topics in GIS are also included.
GEOGRAPH	697	Geosciences	Special Topics	Related	No description available
GEOGRAPH	592B	Geosciences	S-GIS Seminar	Related	No description available
GEOGRAPH	692C	Geosciences	S-New Paradigm Conservation	Related	This graduate course focuses on the sea-change in international thinking about national parks and other protected areas since 2000. Reacting against both "protectionist" conservation based on exclusionary protected areas and early "community based" conservation and integrated development projects, the new paradigm endorsed by IUCN and the Parties to the Convention on Biological Diversity affirms rights-based conservation, greater diversity in protected area goals and governance arrangements, and recognition of Indigenous peoples' and local communities' conservation contributions, rights, and responsibilities. The resulting shift in policy and practice has profound, worldwide ramifications for biological and cultural diversity, conservation, and social justice. This course explores changing conceptualizations of protected areas, key policy shifts, and case studies of new approaches.
GEOGRAPH	694P	Geosciences	S-Political Geography	Related	No description available
GEOLOGY	494LI	Geosciences	Living on Earth: Real-world Is	Related	In this course, students take advantage of the breadth of their shared experiences in the Geosciences Department from human dimensions to physical sciences, drawing from geography, earth systems science and geology. The platform of the course uses real-world Geoscience problems facing societies and cultures, incorporating the themes of Water, Air, Energy, Climate and Sustainability. Using readings, print and on-line media, students are encouraged to work through the ways in which integration of their diverse educational experiences leads to new levels of understanding. The semester culminates in team-based projects in which students investigate connections between current Geosciences issues, their education in their major and their experience as UMass undergraduates, with structured opportunities for reflection on both their discipline and themselves as life-long scholars.
HISTORY	655	History	Tpcs-U S Int/Ctl Hst	Related	This course is designed to explore American culture and its origins particularly in the twentieth century. Students will read a range of books that consider cultural formations through the lens of race, class and gender. Topics include monuments, memory, and media. Students will also be required to present scholarship, as well as write response papers and complete a longer term project that includes the opportunity to create course syllabi with extensive bibliographic research on the chosen topic. Students with experience in the study of U.S. twentieth century history preferred as this course will assume basic knowledge of the historical timeline.
HISTORY	593MP	History	S-Maps, Politics & Power	Related	In the 21st century we take maps for granted. Many of us use maps on a daily basis (think of Google Maps or GPS devices) and it has become increasingly easy for 'ordinary' people to create their own maps. But what is a map? How have maps, and the purposes that they serve, changed over time? And why should historians be concerned with the study of maps? In the first part of the writing seminar we will take a broad look at the history of cartography, focusing in particular on Europe and the Americas. In the second part of the seminar we will consider how maps and map-making have been connected, in different places and at different times between the sixteenth and the twentieth century, to politics and the exercise of power in society.
LANDARCH	543	Landscape Architecture and Regional Planning	Historical Architecture & Landscape I	Related	A survey of the evolution of structures, settlements, and landscapes in the western world from the origins of human societies to the close of the Medieval period.
LANDARCH	601	Landscape Architecture and Regional Planning	Recreation Plan&Des	Related	No description available

LANDARCH	604	Landscape Architecture and Regional Planning	Studio VII	Related	Application of urban design theories as they apply to various scales of urban design, with special attention focused on civic scale design elements and organization of spatial and functional requirements.
LANDARCH	606	Landscape Architecture and Regional Planning	Studio VIII	Related	Introduces students to the process of research, planning, design, and management of historically and culturally significant landscapes through selected real-world site projects.
LANDARCH	607	Landscape Architecture and Regional Planning	Studio IX	Related	No description available
LANDARCH	609	Landscape Architecture and Regional Planning	Studio X	Related	No description available
LANDARCH	613	Landscape Architecture and Regional Planning	Construction I	Related	Site engineering problems related to general design including construction processes, alignment geometry, grading, drainage systems, earthwork, and detailing. Emphasis on construction document preparation.
LANDARCH	614	Landscape Architecture and Regional Planning	Construction II	Related	Design of site structures and required details focusing on stability, durability, and environmental compatibility. Emphasis on statics and strength of materials of site structures. Includes sizing of water retention and detention structures.
LANDARCH	651	Landscape Architecture and Regional Planning	Professional Practice	Related	Models of professional office structure, including management, organization, and economics for private, public, and academic practice. Covers ethics, compensation, contracts, specifications, and business plan preparation.
LANDARCH	661	Landscape Architecture and Regional Planning	Cultural Landscapes: Documentation Values, and Policy	Related	An important course for landscape architects, planners, and other professionals interested in the cultural landscape, this course will introduce students to the identification, understanding, documentation and policy implications of cultural landscapes. While it will touch on the issues of both designed and vernacular landscapes, the focus of the course will be vernacular landscape.
LANDARCH	663	Landscape Architecture and Regional Planning	Heritage Landscape Management	Related	This course offers students the opportunity to deepen their understanding of the theory and practice of heritage management generally and specifically in its application to the management, interpretation, and design of culturally significant landscapes, including urban landscapes, parks, gardens, historic sites, and agricultural landscapes all over the world.
LANDARCH	547L	Landscape Architecture and Regional Planning	Landscape Pattern & Process Lab	Related	This course must be taken concurrently with LANDARCH 547, Landscape Pattern & Process.
LANDARCH	592A	Landscape Architecture and Regional Planning	S-Plants In Landscape	Related	No description available
LANDARCH	593F	Landscape Architecture and Regional Planning	S-LA Study Tour	Related	No description available
LANDARCH	597Q	Landscape Architecture and Regional Planning	ST-Urban Design Workshop	Related	No description available
MICROBIO	597B	Microbiology	ST- Archaea J. Club	Related	No description available
MICROBIO	797E	Microbiology	ST-Microb Ecol J Club	Related	No description available
NATSCI	494I	College of Natural Sciences	Global Issues in Applied Biology	Related	This course will consist of three case study modules. Each module is a real-world problem that integrates knowledge from a biological, social, political, and economic perspective. Students are expected to transfer their knowledge from the broader General Education training into specific real-world issues.
NATSCI	597A	College of Natural Sciences	ST-Special Topics in Science Education	Related	No description available
NATSCI	697A	College of Natural Sciences	ST-Contemporary Science & Engineering	Related	No description available
NATSCI	697F	College of Natural Sciences	ST-Contemporary Science & Engineering III	Related	Hands on seminars for teachers on contemporary science and engineering. Topics will include Pressure, Clouds, and the Weather; Particle Physics; Pollen Biology; How much arsenic do we eat?, and Patterns Around Us.
NRC	526	Environmental Conservation	Silviculture	Related	Silvicultural practices used to manage forests for timber production, wildlife habitat, and watershed protection. Special focus on southern New England, but techniques apply to forests throughout the world. Lab: developing silvicultural plans for project areas. Prerequisites: one course in ecology, and one course in plant identification.
NRC	528	Environmental Conservation	Forest & Wetland Hydrology	Related	Hydrologic structure and function of forest, wetland, and agricultural ecosystems. Changes in water flow and quality associated with land and resource use. Management approaches to prevent or reverse adverse environmental impacts.
NRC	564	Environmental Conservation	Wildlife Habitat Management	Related	The dynamics and management of forested, open woodland, and savanna habitats in North America and elsewhere. Topics include wildlife ecology, habitat classification, resource utilization, impacts on humans, and management techniques.
NRC	570	Environmental Conservation	Ecology of Fish	Related	Advanced course that examines the interactions of fish with their environment. Topics include: feeding adaptations, community trophics, mating systems, reproductive biology, life history strategies, growth dynamics, predator-prey systems, community diversity, and population dynamics.
NRC	571	Environmental Conservation	Fisheries Science & Management	Related	Introduction to the principles of fish stock assessment, with emphasis on harvest modeling and forecasting techniques. Implications of overfishing and habitat degradation.
NRC	578	Environmental Conservation	Watershed Science & Management	Related	Course covers watershed-scale and ecosystem-based approaches to natural resources conservation and environmental decisions. Students will learn various approaches and fundamental concepts for integrating biological, physical, hydrological, and socioeconomic with a trans-disciplinary perspective.
NRC	585	Environmental Conservation	Introduction to GIS	Related	The goals of this course are to teach you basic GIS concepts such as spatial data sources and structures, projections and coordinate systems, geospatial analysis, cartographic modeling, and the integration of remote sensing and GIS. By the end of the course, students will be proficient in ESRI ArcGIS software.
NRC	586	Environmental Conservation	Natural Resource Inventory of Local Lands	Related	This course provides a professional opportunity to gain inventory experience. Students in interdisciplinary teams generate/analyze resource inventory data and provide a professional-grade report to a community or conservation organization.
NRC	590A	Environmental Conservation	Advanced Arboriculture	Related	In this course we will cover aspects of arboricultural practice - including pruning, cabling, rigging, and tree risk assessment - in great depth. We will reference arboricultural standards, best management practices, and the primary scientific literature to gain a mechanical perspective. We will also introduce basic research methods related to investigating the mechanical aspects of arboricultural practice.
NRC	590WS	Environmental Conservation	S-Wetland Soils	Related	A detailed examination of the physical, chemical, and biological properties of soils occurring in wetland environments. Applications of this information critical to wetland restoration efforts seeking to replicate the biochemical environment of natural wetland substrates. Additional emphasis on the identification of hydric soil characteristics necessary for wetland delineation.
NRC	597GA	Environmental Conservation	ST-Readings In GIS	Related	In this course, students will read and discuss three journal articles about applications of GIS in Natural Resources. In addition, students will write an annotated bibliography about a GIS topic of their choice.

NRC	597J	Environmental Conservation	ST- GIS in the Real World	Related	Outside of academia, GIS is often different than what you have learned in Intro to GIS class. You need to work in an "enterprise" GIS environment, where you may have limited ability to alter or even access certain layers. This course will introduce you to how to work in an enterprise environment. Topics include: importing data from the web (formats, meta-data, projections, etc.); using GIS layers from an enterprise server (via ArcSDE for example); quality control of GIS layers (what are the rules for importing data?); using WEB-based GIS for storing and distributing data products or services.
NRC	597W	Environmental Conservation	ST-Wetlands Assessmt	Related	No description available
NUTRITN	577	Nutrition	Nutrition Problems in the US	Related	This class is designed to help you reflect and integrate what you have learned from your nutrition coursework as well as that from your Gen Ed courses and other experiences that have contributed to your development on the way to your final year at UMass. The goal of this course is for students to develop insight into the epidemiologic, physiologic, biochemical and nutritional complexities of major diet-related diseases in the United States.
NUTRITN	578	Nutrition	Nutrition Problems Developing Countries	Related	No description available
NUTRITN	678	Nutrition	Topical International Nutrition	Related	Causes and consequences of malnutrition in developing countries from an interdisciplinary viewpoint. Some knowledge of agriculture nutrition and/or health sciences required. Student presentations and discussion of current issues pertaining to nutrition and development.
POLISCI	780	Political Science	Public Policy	Related	Theories and techniques of decision making and implementation, logical and ethical aspects of social choice, with illustrative case studies from different substantive policy fields.
POLISCI	791AB	Political Science	S-Political Inquiry	Related	No description available
POLISCI	792PE	Political Science	S-Political Economy of Development	Related	This course will cover foundational texts and core debates in the study of development. What is development? How have conceptualizations of "development" and theories of "development" changed over the past century? The course will focus on both domestic and international processes to illuminate a range of development challenges using examples from around the world.
PUBHLTH	583	Public Health	Global Health in the Developing World	Related	Introduction to major health issues in developing world, factors which affect health status, models for tackling these problems, and the role of industrialized countries in improving global health. Students explore major causes of morbidity and mortality and explore strategies to improve health.
PUBHLTH	671	Public Health	Risk Assessment and Management	Related	This course provides an introduction to the field of multi-media (e.g. air, water, soil, food) environmental health risk assessment and how society incorporates risk assessment findings into regulations and policy.
REGIONPL	577	Landscape Architecture and Regional Planning	Urban Policies	Related	Social, cultural, political, and economic analyses of urban policies and practices. Various disciplinary approaches used for critiquing and developing appropriate policies, including urban planning, anthropology, geography, political science, media studies, sociology, and economics. Includes service learning component.
REGIONPL	609	Landscape Architecture and Regional Planning	Landscape Planning II	Related	No description available
REGIONPL	630	Landscape Architecture and Regional Planning	Theory & Practice of Public Participation	Related	This course will introduce students to public participation at the practice level in planning. Lectures and class discussions will review current theory underpinning participation practice, and will critically evaluate the wide range of participation methods currently in use in planning practice. There will also be one or more exercises in participation implementation that occur outside standard class times, when we will join one of the other studio classes, and plan and run their participation process.
REGIONPL	635	Landscape Architecture and Regional Planning	Research Issues in Landscape Architecture	Related	Survey of research issues and methods in landscape architecture and planning. Designed to assist students preparing their research for master's theses and projects. Includes selecting a topic for this research, synthesizing the pertinent literature, developing research questions and selecting a faculty advisor.
REGIONPL	643	Landscape Architecture and Regional Planning	Economic Development Issues in Planning	Related	General introduction to methods and techniques for analyzing and solving problems related to planning, resource allocation, and policy analysis.
REGIONPL	645	Landscape Architecture and Regional Planning	Growth Management	Related	The role of policy in guiding optimal growth. Examination of constitutional issues, controversies regarding growth management practices, techniques used in designing growth management strategies, and future trends in growth management.
REGIONPL	651	Landscape Architecture and Regional Planning	Plnng Hist & Theory	Related	Planning as a decision-making process, the attributes of the political and administrative environment within which planning takes place, and the implications of this environment for the planning process and the planner.
REGIONPL	656	Landscape Architecture and Regional Planning	Judicial Plan Law	Related	The law of land-use control as expressed in major judicial decisions in the U.S. Creation, expansion and powers of municipal corporations; use of legal planning tools such as zoning, abatement of nuisance, eminent domain, etc.
REGIONPL	661	Landscape Architecture and Regional Planning	S-Cultural Landscapes: Documentation, Values, & Policy	Related	An important course for landscape architects, planners and other professionals interested in the cultural landscape, this course will introduce students to the identification, understanding, documentation and policy implications of cultural landscapes. While it will touch on the issues of both designed and vernacular landscapes, the focus for this course will be the vernacular landscape.
REGIONPL	891	Landscape Architecture and Regional Planning	Seminar	Related	No description available
REGIONPL	591A	Landscape Architecture and Regional Planning	S-Economic Development	Related	No description available
REGIONPL	591K	Landscape Architecture and Regional Planning	S-Downtown Revitalization	Related	No description available
REGIONPL	591P	Landscape Architecture and Regional Planning	S-Low Carbon Cities	Related	Across the United States and the world, many municipalities are attempting to reduce emissions of the greenhouse gases that produce global climate change. This course provides an interdisciplinary introduction to the politics, policies, and practices of climate change mitigation at the local scale. It examines what municipal governments are doing to reduce emissions from their own operations (e.g., government buildings) and from businesses and residences-- and places this in state, national, and international contexts. What can cities and towns do to reduce the greenhouse gas emissions? What are Climate Action Plans, and are they effective? What policies should they include, and how should emissions be inventoried? This course provides an interdisciplinary introduction to the politics, policies, and practices of climate change mitigation at the local scale. Students will gain skills in preparing climate mitigation plans.
REGIONPL	592D	Landscape Architecture and Regional Planning	S-Intro to Urban Design	Related	This seminar is about understanding and evaluating the quality of the urban environment, emphasizing the role that streets, neighborhoods and commercial districts play in creating attractive, successful places. Through classroom discussions, readings and site visits, students will discover the ingredients that make good urban spaces, and the role that designers play in creating them.
SCH-MGMT	583	Isenberg School of Management	Cpa Law	Related	A broad survey of legal problems encountered in business transactions; emphasis on implications to accountants and auditors.

SCH-MGMT	650	Isenberg School of Management	Business Data Analysis and Statistical Methods	Related	This course provides an overview of statistical analysis and inference. The language and methods of statistics are used throughout the MBA curriculum, both in the classroom and in assigned readings. In addition, the language and methods of statistical analysis have permeated much of academic and professional writing as well as media reporting, both inside and beyond the business community. The goal is to present a broad introduction to statistical thinking, concepts, methods, and vocabulary. The course has an emphasis on business applications.
SCH-MGMT	660	Isenberg School of Management	Marketing Strategy	Related	This course provides an executive viewpoint of marketing concepts, such as branding and segmentation, for strategic and organizational decision-making. There is an emphasis on tools available for analysis and control of marketing activities, including the use of new media. Topics also include industrial life cycles, customer experience, and pricing strategy.
SCH-MGMT	689	Isenberg School of Management	Organizational Strategy	Related	Capstone course requiring application of knowledge and techniques derived from previous courses. Course presents strategic management theories and frameworks, uses integrative cases, and leverages empirical observations to guide students in the formulation of successful firm-level strategies.
SCH-MGMT	783	Isenberg School of Management	Business Law	Related	Examines and evaluates legal problems as they relate to the business environment. Course will deal with areas of law including contracts, agency, ethics, bankruptcy, business organization and other areas of commercial law.
STOCKSCH	520	Stockbridge School of Agriculture	Physiolgy Crop Yield	Related	Physiology of crop plants, carbon fixation, partitioning, growth and development, competition in crops, environmental factors and yield relationships of crops.
STOCKSCH	530	Stockbridge School of Agriculture	Plant Nutrition	Related	The acquisition, translocation, distribution, and function of the essential inorganic elements in plants. Genetic control of plant nutrition and ecological adaptation to nutritional variables. Diagnosis of plant nutritional disorders. With lab.
STOCKSCH	545	Stockbridge School of Agriculture	Postharvest Biology	Related	The basic biochemical and physiological processes occurring in fruits, vegetables, and flowers after harvest; postharvest treatments to modify these processes.
STOCKSCH	580	Stockbridge School of Agriculture	Soil Fertility	Related	The role of mineral elements in the growth of plants; plant response to fertilizers and other soil amendments; soil reaction, mineral deficiencies and toxicities; environmental impact of soil fertility
STOCKSCH	585	Stockbridge School of Agriculture	Inorganic Contaminants in Soil,Water, and Sediment	Related	Physical, chemical, and biological factors affecting the fate and transport of inorganic contaminants (including heavy metals) in soil, water and sediment. Sources, chemistry, pedogenic and geochemical behavior of these contaminants and methods used for their analysis. Risk assessment, and remediation technologies, options, and goals.
STOCKSCH	661	Stockbridge School of Agriculture	Intermediate Biometry	Related	Supplies background necessary to design and analyze field and laboratory experiments. Focus on statistical analysis for biological scientists. Primary emphasis on analysis of variance, regression, and experimental design. Computer-assisted analysis experience provided.
STOCKSCH	497SF	Stockbridge School of Agriculture	ST-Student Farm Management II: Harvesting, Marketing, and Management	Related	In this class students will learn the practical application of harvesting and marketing techniques used for the sale of organic vegetable crops. Students will complete a financial analysis of the current growing season and make recommendations for the next production cycle.
STOCKSCH	591A	Stockbridge School of Agriculture	S-Plant Biotech Journal Club	Related	This journal club is open to both graduate students and advanced undergraduate students who have an interest in reviewing the current scientific literature in the field of plant biotechnology.
STOCKSCH	597C	Stockbridge School of Agriculture	ST-Plant Nutrition	Related	Additional discussion period to enhance student learning in PLNTSOIL 530. Review and discussion of laboratory exercises and problem sets for PLNTSOIL 530. Instruction for writing scientific journal articles and abstracts. Review of current journal literature related to plant nutrition.
STOCKSCH	597V	Stockbridge School of Agriculture	ST-Integrated Turf Management	Related	This capstone course stresses concepts of Integrated Pest Management and reviews stress management and pest management strategies. Each student will develop and IPM plan for a turf setting.
STOCKSCH	692A	Stockbridge School of Agriculture	S-Topics in Plant-Pathogen Intracttions	Related	Agricultural technologies have revolutionized the way we manage crops since the dawn of time. In the post-genome era, plant pathologists have a new generation of tools that are ripe with the potential to influence how we manage plant diseases. During this journal club we will focus on research papers and case studies that illustrate how new technologies can be used to build our knowledge base and how new findings can influence disease management. Examples of potential topics for discussion include molecular epidemiology of plant pathogens, rapid molecular diagnostic assays to detect disease, applying genomics technologies to better understand plant host and fungal pathogen interactions, and the evolution of fungicide resistance.
STOCKSCH	697A	Stockbridge School of Agriculture	ST-Data Analysis & Interpretation	Related	Informal discussion class, focusing on students' problems, concerns, or enthusiasm with their own experimental designs, data analyses, or interpretations of results, including computer- (particularly SAS) generated output. New techniques presented by the instructor or guest instructors as requested by the class. Students gain practical experience with data analysis and a better understanding of the approaches necessary for their own thesis or dissertation work.
STOCKSCH	792A	Stockbridge School of Agriculture	Sem-Attendance	Related	Master's candidates attend weekly seminar meetings which will cover various topics.
STOCKSCH	892A	Stockbridge School of Agriculture	Sem-Attendance	Related	Doctoral candidates attend weekly seminar meetings which cover various topics.
SUSTCOMM	543	Landscape Architecture and Regional Planning	Hist Arch & Ldscp I	Related	No description available
SUSTCOMM	577	Landscape Architecture and Regional Planning	Urban Policies	Related	Urban issues in the context of city, metropolitan, and regional implications, changing functions, and relationships of central cities and suburbs, housing, zoning, urban blight, employment and industrial location, revitalization, and formulation of community planning goals.
SUSTCOMM	591M	Landscape Architecture and Regional Planning	S-Planning for Industrial Development	Related	This course focuses upon how the states, regions, cities and towns across America are planning for light and heavy manufacturing. It focuses upon the needs of industry, the planning process for industrial development and the revitalization of outmoded facilities. It includes lectures, seminars and student presentations.