

# ENVIRONMENTAL STUDIES (ENST)

## **ENST-252 Ecology of a Changing Planet (4 Credits)**

This integrated lecture-lab course will provide an understanding of biological and ecological principles and relate them to different environmental issues such as global climate change, conservation of habitats and biodiversity, land use change, pollution etc. Field and lab exercise emphasize sampling and experimental design, hypothesis formation, data analysis, and interpretation.

**Prerequisite(s):** One course to meet the QL requirement and one ENST class

**Offered:** Fall, Every Year

## **ENST-253 Environmental Governance (4 Credits)**

Making environmental decisions is extremely challenging due to the complex interaction of science, politics, associated uncertainties, conflicting individual-social values and decision urgency. This course provides an overview of the current and emerging processes by which communities, businesses and governments make decisions relating to environmental governance.

**Prerequisite(s):** ITW-101 and one ENST class

**Offered:** All, Every Year

## **ENST-290 Special Topics (1-4 Credits)**

Study of selected topics related to Environmental Studies. May be repeated as topics change.

## **ENST-298 Independent Study (1-4 Credits)**

An opportunity for a qualified student to explore work in an area of individual interest, selected and pursued in consultation with a faculty member. Consent required of the instructor who will supervise the independent study. May be repeated for a total of 4 credits.

**Offered:** All, Every Year

## **ENST-304 Environmental Law & Regulation (4 Credits)**

Develops an understanding of the system of laws and regulations that protect the environment, human health and natural resources. The role of science in the legal/regulatory process will be emphasized, as will federal/state regulatory processes and requirements. Cross-Listed as: SAFE-304.

**Prerequisite(s):** ENST-253, SAFE-302, ISPOSC-210 or permission of instructor

**Offered:** Fall, Every Year

## **ENST-308 Sustainability & Justice Planning (4 Credits)**

This course examines environmental sustainability from a systematic perspective of how places are socially managed and governed. It examines how current patterns of inequality, environmental degradation, and power have come to be, and it explores how individuals, groups, and governments can implement plans for more equitable and environmentally sustainable communities.

**Offered:** Fall, Odd Years

## **ENST-311 Environmental Health (4 Credits)**

This course will examine the impact of environmental factors on human health. Basic principles of toxicology will be reviewed. Conceptual understanding of chemical, biological, physical hazards and their associated health effects will be emphasized. Contemporary challenges of environmental health policy-making will be discussed.

**Prerequisite(s):** Take INCHEM-103 or INCHEM-111

## **ENST-313 Air Quality Science (4 Credits)**

Students learn the basics of air quality science with an emphasis on aerosols in the environment, effects on human health, and sources and control of air pollution. Indoor air quality, the operation of environmental air monitoring instrumentation and hands on sample collection will be reviewed.

## **ENST-323 Mapping Nature With GIS (4 Credits)**

Introduces Geographic Information System (GIS) techniques for capturing, analyzing, and presenting spatial environmental data. Teaches skills and geoprocessing tools for combining data from varied sources to represent and solve environmental challenges, including satellite image processing, classification and visualization. Students learn to manipulate data and design a variety of maps.

**Prerequisite(s):** 44 credits completed and one ENST class

**Offered:** Spring, Every Year

## **ENST-325 Mapping Social Patterns - GIS (4 Credits)**

Introduces fundamental Geographic Information System (GIS) concepts for mapmaking and data visualization, including symbolization, time-series, and online applications. Emphasizes graphic design principles for effective visual communication of social patterns, such as demographics, voting patterns, or human health. Through exercises and projects, students manipulate data and design a variety of maps.

**Prerequisite(s):** One ENST class

**Offered:** Spring, Odd Years

## **ENST-330 Natural Resources Management (4 Credits)**

Examination of the use and management of renewable and non renewable resources, including patterns of assessment, conservation policies and practices, and human impact on the environment. Resources discussed include land, water, air, forests, wilderness and recreation from an international perspective.

**Prerequisite(s):** 4 credits in Geography or Environmental Studies

**Offered:** Fall, Even Years

## **ENST-344 Community Solutions to Climate Change (4 Credits)**

Increasingly, communities across the world are reaching the conclusion that they need to act on their own to prepare for climate change. We examine what motivates and empowers action and take in-depth looks at case studies of individuals and communities on the front lines of climate adaptation and mitigation.

**Prerequisite(s):** ISENST-120 and either ENST-253 or ISGEOG-203

**Offered:** Fall, Every Year

## **ENST-352 Conservation of Ecological Systems (4 Credits)**

This course focuses on the practical and theoretical aspects of conservation and restoration biology through lectures, discussions and student projects. It examines the degradation and loss of biodiversity and ecosystems due to human activity and considers alternatives for avoiding and/or mitigating these impacts.

**Prerequisite(s):** ENST-252

**Offered:** Spring, Every Year

## **ENST-353 Restoration Ecology (4 Credits)**

Introduces principles of ecosystem restoration, considering biophysical and social systems. Applies principles to local case studies, where human actions have harmed ecosystems. On completing this class, students will be able to: describe the state of the field; describe restoration successes and failures; and analyze a restoration project. Required field trips.

**Prerequisite(s):** 44 credits completed, and either ENST-252, INBIO-111, or IIPSYC-172

**Offered:** Spring, Even Years

**ENST-371 Environmental Ethics (4 Credits)**

This course provides an overview of environmental ethics, exploring the ethical basis of our responsibilities for the natural world in the context of environmental thought. Discussions incorporate contemporary environmental perspectives, including animal rights, eco-feminism, deep ecology and environmental justice; and specific issues: wilderness preservation, species conservation, climate change and sustainability.

**Prerequisite(s):** 44 credits completed and ISENST-120

**Offered:** Spring, Every Year

**ENST-373 Field Study Environmt & Sust (4 Credits)**

Off-campus field study. Themes include aspects of the physical and/or cultural environment, depending on the expertise of the instructor and the areas under observation. Course may be repeated for a maximum of 16 credits, only 8 of which are applicable toward the major in Environmental Studies or Sustainability Studies.

**Prerequisite(s):** Permission of instructor

**Offered:** Spring, Even Years

**ENST-393 Sustainability for Organizations (4 Credits)**

As social animals, humans form collective organizations in order to accomplish their goals. These organizations take many forms in the public/private sector, but they all offer opportunities to engage in sustainable practice. This course explores how to drive sustainability innovation within both new and existing organizations, and associated benefits.

**Prerequisite(s):** 44 credits completed and ISENST-120

**ENST-395 Seminar I (4 Credits)**

In-depth analysis of environmental and sustainability literature and methodologies. Emphasis on proposal writing and oral presentation. Development of a project proposal to be completed in ENST-495. Exploration of postgraduate opportunities. Field trips and field work required.

**Prerequisite(s):** 44 completed credits, major in Environmental Studies, Geography, or Sustainability Studies; or permission of instructor

**Offered:** All, Every Year

**ENST-404 Risk and the Environment (4 Credits)**

Risk decision-making regarding the environment involves multiple stakeholders and is often controversial. This course examines the theory and practice of environmental risk assessment and management, with an emphasis on the social, political, and technical dimensions of risk decision-making.

**Prerequisite(s):** 44 credits completed, and ISGEOG-203 or ENST-253

**ENST-461 Freshwater Science and Systems (4 Credits)**

An interdisciplinary course that examines the physical factors that control freshwater aquatic systems. Principles of hydrology, geomorphology, and aquatic ecology will be presented, followed by explorations of both human interactions with aquatic systems and restoration of ecological damage caused by human actions. Labs focus on field skill development.

**Prerequisite(s):** 44 credits completed, and either ENST-252, IENST-201, or INBIO-111

**Offered:** Fall, Odd Years

**ENST-490 Advanced Special Topics (1-4 Credits)**

Study of selected topics related to environmental studies at an advanced level. May be repeated as topics change.

**ENST-491 Adv Spec Topics: Environmental Science (4 Credits)**

Study of selected topics related to environmental science at an advanced level. May be repeated as topics change.

**Prerequisite(s):** ENST-252 or permission of the instructor

**ENST-492 Adv Topics in Environment & Sustainability (4 Credits)**

Study of selected topics related to human dimension of environmental studies at an advanced level. May be repeated as topics change.

**Prerequisite(s):** 44 credits completed, and either ISGEOG-203 or ENST-253

**ENST-494 Advanced Cooperative Education (1-6 Credits)**

Sequential work learning experience for which compensation may be received. Positions arranged by students with sponsorship, approval and evaluation by full time faculty. Elective credit, normally 120 hours/credit, to maximum of 12 credits per degree program. May be repeated for credit. Graded Pass/Fail.

**Prerequisite(s):** 2.0 cumulative GPA, Declaration of Major, AND Permission of instructor

**ENST-495 Seminar II (4 Credits)**

Capstone course. Students explore in-depth issues of the environment and sustainability, integrating science and policy. Completing the project developed in ENST-395, students further enhance their research, critical thinking, and oral and written communication skills. Prepares students for professional careers or postgraduate opportunities. Field trips or field work required.

**Prerequisite(s):** ENST-395

**Offered:** All, Every Year

**ENST-498 Independent Study (1-6 Credits)**

Advanced work in various fields of environmental science through individual reading, writing, laboratory work, and/or field investigation. Requires research project and a written report. 1 hour conference. May be repeated to a total of 6 credits.

**IENST-110 Food, Health and the Environment (4 Credits)**

This interdisciplinary course explores the connection between food choices, food production systems and their impacts on public health and the environment. Considering social, political, economic, and ethical factors, students will compare different agricultural systems and assess the ecological footprint and sustainability of our daily decisions of what to eat.

**Offered:** All, Every Year

**IENST-150 Global Environmental Change (4 Credits)**

Students will gain a basic scientific understanding of the Earth's major physical and biological systems within the context of global environmental issues, and will also explore global environmental change and potential solutions from interdisciplinary economic, ethical, political, and social perspectives.

**Offered:** All, Every Year

**IENST-151 The Environment of Central New England (4 Credits)**

Introduces the geology and ecology, the natural and human history, and the social systems and governance structures that shape our regional environment. Explores the concept of place using interdisciplinary approaches including hands-on field work, preparing students to become responsible environmental stewards of the places where they live.

**Offered:** Fall, Every Year

**IENST-302 Apocalypse Science and Society (4 Credits)**

This multidisciplinary course examines natural and anthropogenic hazards through perspectives from Environmental Geography, Cultural Studies, Science and Technology Studies, and Earth Science. Students will scientifically investigate dynamic earth processes and how they interact with social factors to create catastrophes. Students will also analyze cultural and political aspects of apocalyptic stories.

**Prerequisite(s):** Take 24 credits of ISP, including ITW-101 and QL

**Offered:** Spring, Odd Years

**INENST-201 Earth Cycles & Systems (4 Credits)**

An overview of earth's physical systems and their interactions. Includes a survey of earth materials, the rock cycle, plate tectonics (earthquakes and volcanoes), landscape development (glaciers and rivers), the water cycle, weather, climate, and map interpretation. Three-hour lecture, two-hour lab, required field trips.

**Offered:** All, Every Year

**INENST-300 Geoscience Issues and Society (4 Credits)**

A course focusing on the cause and effect of geologic processes that impact society. Content may vary, but includes earthquakes, tsunamis, floods, volcanic activity, resource issues, and the geologic record of climate change. Students are expected to closely monitor popular media to document current geologic events and their effects.

**Prerequisite(s):** 24 credits in ISP, including ITW-101, QL, and one course from the IS category

**Offered:** Fall, Even Years

**INENST-303 Life Sustainability in Earth's History (4 Credits)**

This course investigates modern environmental issues in the context of Earth's history. Sustainability of life on Earth has always been linked with planetary cycles and major events, many of which are occurring today. Topics include climate change, natural hazards, natural resource limitations, pollution, evolution, and mass extinction. Required field trips.

**Prerequisite(s):** 24 credits in ISP, including ITW-101 and QL

**Offered:** Fall, Every Year

**INENST-320 Earth's Climate: Past & Future (4 Credits)**

The tools of climatic science are used to investigate the evidence and mechanisms for earth's climatic change throughout geologic time. Includes climate classification and reasons for climate, climate forcing mechanisms, anthropogenic forcing, the global-warming crisis, and potential remedies. Combined lecture/lab.

**Prerequisite(s):** 24 credits in ISP, including ITW-101 and QL

**Offered:** Spring, Even Years

**INENST-381 Farming With Nature in Mind (4 Credits)**

Through the lens of agroecology, we consider ecological and social conditions that influence the healthy functioning of food production systems and the effect of varying farming methods on the environment. Students will investigate models from the U.S. and around the world and have opportunities for hands-on experimentation in agroecological methods.

**Prerequisite(s):** 24 credits in ISP, including ITW-101 and QL

**Offered:** Fall, Every Year

**INENST-383 Rethinking Energy (4 Credits)**

As fossil fuel energy sources have high environmental impact, we need to understand ways that cleaner, renewable alternatives can be more broadly available. This course develops a basic understanding of the physical laws of energy and explores the connections between energy sources, needs, politics, policies, environmental impact, and sustainability.

**Prerequisite(s):** 24 credits in ISP, including ITW-101 and QL

**ISENST-120 Principles of Sustainability (4 Credits)**

Explore the idea of sustainability from a system's perspective and a personal perspective. We examine forces at work in shaping the sustainability of agriculture, water, energy, materials, and biodiversity at regional, national, and global levels.

**Offered:** All, Every Year

**ISENST-203 Globalization Culture & Place (4 Credits)**

This course analyzes multiple facets of contemporary human geography including global patterns of culture, population, economy, environmental change and geopolitics. It also focuses on how cultures change and respond to the pressures of globalization.

**Offered:** All, Every Year

**ISENST-205 Environmental Geography (4 Credits)**

Explores complex relationships between nature, culture and place. Emphasis is placed on spatial aspects of human interactions with the environment resulting in serious issues including pollution, global climate change, and resource depletion. Environmentally sustainable actions will be examined and assessed.

**Offered:** Fall, Every Year

**ISENST-350 Energy Policy and Politics (4 Credits)**

Covers the policies and politics that shape the energy system of today. We examine legislation, policy, and political controversies about fossil fuels, nuclear, and renewables. Our focus is both historical and contemporary and primarily centered on the United States. This course is offered completely on-line.

**Prerequisite(s):** 24 credits in ISP including ITW-101 and QL

**ISENST-382 Environmental Advocacy (4 Credits)**

This course explores how environmental advocates work to implement changes to protect the natural world and the public. Theories of social power and personal empowerment, ethical perspectives, diverse models of mobilization, advocacy roles and tools, and various forms of media will be studied as ways to support an advocacy campaign.

**Prerequisite(s):** 24 credits in ISP, including ITW-101 and QL

**Offered:** Fall, Every Year