

ENVIRONMENTAL STUDIES

The Environmental Studies Program provides students with a broad understanding of contemporary and past environmental problems, including an examination of their causes, mechanisms and effects. This understanding will reflect the relevant natural, cultural, and political processes including the interplay among the environment, human values, and economic institutions. Environmental issues such as social justice, food equity and sustainability, and urban nature and its challenges are tied to the geography of pollution, wealth and poverty, and the distribution of biological and mineral resources. The linkage of scientific and non-scientific elements in Environmental Studies is fundamental to the program. While an understanding of the factual basis of environmental issues is necessarily scientific, such an understanding is rarely sufficient either for a full appreciation of the causes and consequences of an environmental issue or for choosing a solution to an environmental problem. A comprehensive appraisal of most environmental issues thus involves contributions from disciplines across the curriculum.

Students interested in environmental studies have the opportunity to pursue a minor or major. Both programs are designed to give students a multi-disciplinary experience that reflects the breadth and depth of the field. Both the major and minor programs are “student-centered,” allowing each student to design the curriculum that best suits his/her interests. The minor involves seven courses and the major requires fourteen courses. Students are encouraged to enrich their curriculum through a study abroad experience, research project, or academic internship.

Prospective Environmental Studies majors with a strong interest in science should also explore the Biology major with an Environmental Studies minor. The Biology major may be more appropriate for students with an interest in pursuing graduate studies in environmental science. Students interested in environmental policy making and law should also consider whether they would be best served by a departmental major (e.g. Economics, History, Political Science, Sociology) with an Environmental Studies minor. Students interested in how culture, ethics, and power shape our relationship to the natural world should consider whether they may best be served by a departmental major (e.g. Anthropology, English, History, Music, Philosophy, Religious Studies, or the Visual Arts) with an Environmental Studies minor. The director of Environmental Studies can assist prospective Environmental Studies students in determining which combination of majors and minors best serves the students’ academic interests and post graduate objectives.

Advanced Placement Credit

Holy Cross awards credit for Advanced Placement exams taken through the College Board Advanced Placement Program and the International Baccalaureate Program and will accept some Advanced Level General Certificate of Education (A-Level) exams. One unit of credit is awarded for an Advanced Placement score of 4 or 5 in any discipline recognized by the College. One unit of credit is awarded for a score of 6 or 7 on a Higher Level International Baccalaureate Examination in a liberal arts subject. One unit of credit is awarded for a score of A/A* or B on an A Level exam in a liberal arts subject. The College does not award credit for the IB Standard Exam or the A-Level Exam. AP, IB, and A-Level credit may be used to satisfy deficiencies and common area requirements. Each academic department has its own policy regarding the use of AP or IB credit for placement in courses and progress in the major. The Department Chair must also review the A-Level score to determine

placement in courses and progress in the major. See departmental descriptions for further information.

Sarah Luria, Ph.D., *Professor, Chair*

Justin S. McAlister, Ph.D., *Professor*

Sara G. Mitchell, Ph.D., *Professor*

Holly Elizabeth Moulton, Ph.D., *Assistant Professor*

Keith Seitter, Ph.D., *Visiting Professor*

Philip Dugger, Ph.D., *Visiting Assistant Professor*

Clare Gaffey, Ph.D., *Visiting Assistant Professor*

Christopher Amante, Ph.D., *Visiting Lecturer*

Academic Plans within Environmental Studies

- Environmental Studies Major (<https://catalog.holycross.edu/academic-plans/environmental-studies/environmental-studies-major/>)
- Environmental Studies Minor (<https://catalog.holycross.edu/academic-plans/environmental-studies/environmental-studies-minor/>)
- Geosciences Minor (<https://catalog.holycross.edu/academic-plans/environmental-studies/geosciences-minor/>)

ENVS 117 – Environmental Science Course count: 1

The goal of this course is to provide an understanding of major environmental problems by studying their biological bases. Applied and basic material will be integrated in most sections. Basic topics include ecosystem structure, energy flow, biogeochemical cycles, population growth and regulation and environmental policy. Applied topics include human population growth, agriculture and food production, pest control, conservation of forests and wildlife, preservation of biological diversity, energy use, water and air pollution and atmospheric climate change.

GPA units: 1

Common Area: Natural Science

Typically Offered: Fall, Spring

ENVS 118 – Environmental Perspectives Course count: 1

This course introduces students to the interdisciplinary field of environmental studies, which examines the diverse relationships between humans and the natural and constructed worlds in which they live. This course will examine the complex ways that we think about what constitutes nature and environment and how humans do and should relate to these categories. It will then provide an overview of the emergence of environmental challenges as a topic of concern in the United States and globally as well as encourage students to engage with contemporary environmental challenges. We will place special emphasis on questions of how axes of difference (class, race, ethnicity, nationality, etc.) intersect with environmental change, using social justice as a core lens through which we will define, describe, and analyze impacts of and solutions to environmental challenges. Integrating approaches from the social sciences and humanities, the course will provide students with essential background for engaging in subsequent Environmental Studies courses and for living in a rapidly changing world.

GPA units: 1

Common Area: Social Science

Typically Offered: Annually

ENVS 119 – Introduction to Environmental Studies: Environmental Narratives Course count: 1

Environmental narratives are stories told by different people and cultures around the world that shape our ideas and values about how we relate to our surroundings. Some very famous and important stories beginning even with the story of Genesis in the Old Testament have served to emphasize both the separation of humans from nature, and also the superiority of humans to nature. Why have these stories encouraged us to think in this way, and how might we rethink these narratives to develop new and more informed understandings of how humans interact with the world? By using the methods and approaches of humanist scholarship, this class engages in the broader movement of the environmental humanities, and explores the ways that political, social, and cultural values shape how we understand our responsibilities to the natural world and to each other.

GPA units: 1

Typically Offered: Annually

ENVS 125 – Introduction to Climate Change Course count: 1

Climate change is the most pressing problem facing humanity and is already impacting every aspect of society. This course will cover the irrefutable scientific evidence on how humans are causing global warming and the current and projected impacts of climate change. The political and social science aspects of the climate debate will be explored, as well as science-informed policies that provide viable solutions to limit climate impacts. Pathways toward a more climate resilient and sustainable future that also address longstanding environmental justice issues will also be covered.

GPA units: 1

Common Area: Natural Science

Typically Offered: Fall, Spring

ENVS 200 – Environmental Law Course count: 1

Environmental law is controversial and fascinating. Consider some of these newspaper headlines: "Scientist Say Climate Heating Up," "Pesticides Found in Local Groundwater," "Endangered Salamander Stops Development." Environmental law and policy are a part of everyday life. The challenges to environmental quality have a critical influence on where we live and how well we live and, most important, the kind of world in which our children and their children will live.

GPA units: 1

Typically Offered: Annually

ENVS 220 – Environmental Psychology Course count: 1

This course offers an overview of the interdisciplinary field of environmental psychology. We will explore the dynamic relationships between people and places in order to understand how our behavior and cultural values shape our environment, and how in turn, our surroundings affect us. Using the lens of environments where we live, work and play, we will examine the everyday experience of different types of places including the home, institutional settings, public space, and play spaces. Attention will be placed upon social and spatial inequalities, local and global relations, and intersections of race, gender, sexual orientation, culture, and power. We will explore psychological questions of perception, place identity, restorative environments, pro-environmental behavior, culture, place attachment, cognition, and the meaning of spaces through readings, film, visual exercises, and ethnographic analysis. The course will place emphasis upon the built environment, with a particular focus on addressing the intertwining of social and environmental problems, and the role of design in producing social spaces.

GPA units: 1

Common Area: Social Science

Typically Offered: Spring

ENVS 235 – Climate Science Course count: 1

The Earth's climate is changing rapidly and represents the most pressing problem facing humanity. This course examines the science of the Earth's climate system and the natural and anthropogenic forcing mechanisms that cause climate variability and change. It covers the mathematical models that describe the Earth's energy balance and the sophisticated computer simulations models that allow the sensitivity of the climate system to be explored and for climate change impacts to be projected. Solutions to the climate crisis through science-informed policies covering mitigation and adaptation will also be examined.

GPA units: 1

Common Area: Natural Science

Typically Offered: Annually

ENVS 245 – Sustainable Energy Course count: 1

Minimizing the impacts of global climate change requires society to transition to non-fossil-fuel energy sources as quickly as possible. This course will explore the issues associated with developing our carbon-free energy future through renewable and other sustainable energy sources such as wind, solar, hydropower, and geothermal. Topics will include the use of climatological data to project potential generation from renewables, siting issues, dealing with the variability of wind and cloud cover (and on longer timeframes, the rain needed to maintain hydropower reservoirs), and the complex interplay between generation and storage that need to be addressed to ensure reliable delivery of the energy we need now and in the future. All of this will be framed as part of the larger goal of achieving a more sustainable future.

Prerequisite: ENVS 117 or 125 or 235 or CHEM 181 or PHYS 115 or GEOS 120 or 150 or MATH 133/135.

GPA units: 1

Common Area: Natural Science

Typically Offered: Spring

ENVS 247 – Introduction to Geographic Info Systems Course count: 1

Introduces and explores the fundamental concepts of Geographic Information Systems (GIS), with a focus on how to store, query, and analyze spatial environmental data. While students will gain a working knowledge of specific GIS software, the focus of the course is on concepts that are fundamental to spatial analysis using any GIS software. GIS is used in a diversity of fields ranging from archaeology to zoology, with some specific examples being ecology, geology, environmental hazards, environmental and social justice, and business. This course explains the structure and function of GIS, placing them in the context of computer information systems, cartography, and supporting disciplines such as remote sensing, and shows why and how GIS is important. Covers basic concepts such as map characteristics and projections, relational databases, and spatial analysis. Explores sources of data and the implementation and management of GIS projects to answer important environmental and societal questions.

Prerequisite: Enrollment is limited to ENVS majors or minors only.

GPA units: 1

Typically Offered: Annually

ENVS 252 – Urban Forestry Course count: 1

In this course, you will examine the urban forest 'one of the most important natural systems in cities to increase the quality of life and health of residents. Urban forests are socio-ecological systems; their structure, composition and distribution are the results of biophysical and human factors. For this reason, students will learn how to identify trees, best practices in planting and stewardship and how to model ecosystem services as well as the urban theory that explains the governance and 'rules of the game' behind green space distribution in cities. After completion of the course students should: identify common street trees in the northeast; monitor and model the urban forest and the ecosystem services they provide; be knowledgeable about the social processes and power dynamics that impact the composition and distribution of urban green space; be able to collect and analyze quantitative and qualitative data to answer research questions.

Prerequisite: BIOL 117.

GPA units: 1

Common Area: Natural Science

ENVS 299-F04 – Gender and Climate Justice Course count: 1

This course engages with environmental studies, advances in glaciology and geomorphology, and feminist science and technology studies to explore gender and climate justice in glaciated regions of the globe. Globally, women, trans, and gender-diverse people bear the disproportionate costs of environmental change, but research and media reports often sideline gender and foreground poverty as the main source of environmental ills. As such, this course is focused on the intersection of gender and climate justice, which demands that multi-faceted questions of power and inequity be considered to understand the unequal distribution of climate change burdens and benefits. Students will be asked to engage with both gendered impacts of climate change as well as feminist theory to re-think how climate change knowledge is produced and valued. The class will be focused on three case studies in rapidly de-glaciating regions: the Andes, the Arctic, and Antarctica, and will draw on place-based local knowledge in addition to scientific and social scientific studies. Media analysis will be a critical component of student learning, since climate science is synthesized and communicated to the public in a variety of contested formats. As such, this course will also focus on data ethics and how to critically analyze bias in the media's data interpretations, including newspapers, editorial articles, and nature documentaries. By the end of the course, students will be able to articulate how gender can be better incorporated into climate research and how a focus on both gender and feminist theory could help to re-think human-environment interactions in icy places. Students will produce a variety of creative documents, speeches, or performances to communicate their learning to a broader audience.

GPA units: 1

Common Area: Social Science

ENVS 299-S01 – Contested Waterscapes Course count: 1

Riverine and coastal spaces have gained renewed salience in recent decades due to debates on climate change, globalization, and human and species migration. This course explores the social and cultural dimensions of these waterscapes, focusing on contemporary and historical cultures of management and lifeways. We will examine the worldviews, technologies and cultural specifics that dictate why we manage waterscapes in the way we do. And we will read work by cultural and feminist scholars to learn about imaginaries and meanings of waterscapes, in order to consider agencies and dynamics of socio-ecological life that are well beyond the human/anthropocentric realm. We will use the subdisciplines of; cultural and feminist geography, maritime anthropology, critical oceanic studies, decolonial thinking, political ecology, Science and Technology Studies (STS), and Urban Studies to understand how these places produce and are produced by culture on the ground.

GPA units: 1

Common Area: Social Science

ENVS 299-S04 – Urban Ecosystems Course count: 1

This is a seminar-style course exploring interdisciplinary and transdisciplinary approaches to understanding ecosystems in an urban context within Worcester and across the globe. As human populations continue to grow, the greatest expansions are predicted to occur within cities. This means we live in a time of increasingly rapid urbanization. This course aims to explore the shared relationships between human systems and natural systems, focusing on the role of human societies in nature, the role of nature in human societies, and building urban resilience for humans and natural systems alike.

GPA units: 1

Common Area: Natural Science

Typically Offered: Spring

ENVS 299-S06 – Worcester Eats Course count: 1

Climate change will have severe implications for our food system; causing increased flooding, coastal erosion, crop failure, plant migration, species extinction, and habitat destruction. Given this new urgent reality, this course examines resiliency within the Worcester County food system. This is a CBL course.

GPA units: 1

Common Area: Social Science

ENVS 299-S07 – Disturbance Ecology Course count: 1

Disturbance plays an important role in ecosystem processes at multiple spatial and temporal scales, from an individual tree struck by lightning to long-term global climate change. In this seminar-style class, we will examine how disturbance shapes the composition and structure of ecological communities and how communities respond to and recover from various types of disturbances at all scales. Whole-class and group discussions based on the most up-to-date research articles and textbook readings will be complemented by individual projects that delve deeper into specific topics of students choosing.

Prerequisite: BIOL 163

GPA units: 1

Common Area: Natural Science

ENVS 299-S08 – Environmental Justice Course count: 1

Environmental justice is, put simply, the fight and the right for everyone, regardless of identity and geography, to live, work, and play in a clean and healthy environment. While this may seem like an obvious statement (i.e. that everyone deserves to be able to live in a healthy world), it is far from reality. In this course, we will look at what it means to fight for environmental justice across history and the world, and why it is even necessary that this should be a fight at all. We will look at the roots of environmental injustices in the US and across the globe as well as the contemporary issues those injustices have created, including the movement from environmental justice to climate justice. We will also collectively imagine what an environmentally just future might look like. Students will research environmental and climate justice issues in the Worcester area and share their work through entries in the EJ Atlas, a creative project, and a hybrid policy and research document.

GPA units: 1

ENVS 400 – Tutorial Course count: 1

GPA units: 1

Typically Offered: Fall, Spring

ENVS 401 – Directed Readings Course count: 1

A program in reading and research in a specific topic.

GPA units: 1

Typically Offered: Fall, Spring

ENVS 402 – Undergraduate Research Course count: 1

GPA units: 1

Typically Offered: Fall, Spring

ENVS 404 – Capstone Seminar Course count: 1

This capstone seminar is designed for Environmental Studies majors to apply and integrate their knowledge from previous coursework, while introducing the opportunity to conduct independent or collaborative work oriented towards the discovery of new information and/or solving environmental challenges. Seminar topics will vary from year to year and will be organized through an overarching question related to the environment. This question will be explored through a multi- and/or interdisciplinary lens, and in most years will involve community stakeholders, such as the College, the city of Worcester, and/or local organizations. Work will culminate in a final project and presentation.

Prerequisite: 4th year ENVS majors or permission.

GPA units: 1

Typically Offered: Annually Fall