

ENVIRONMENTAL SCIENCE (ENV)

ENV 101 | INTRO TO ENVIRONMENTAL SCIENCE WITHOUT LAB | 4 quarter hours (Undergraduate)

ENV 101 provides an overview of how the natural world works, how we interact with it and how we can work to protect, restore and sustain it for the future. Topics include an overview of basic ecological principles, population, biodiversity, energy, natural resources and pollution. The course emphasis is on the science behind current environmental concerns. Social, ethical, economic, and political perspectives are considered in order to provide perspective and a fuller understanding of the issues and their solutions. Students cannot receive credit for both ENV 101 and ENV 102.

ENV 102 | INTRO TO ENVIRONMENTAL SCIENCE WITH LAB | 4 quarter hours (Undergraduate)

ENV 102 provides an overview of how the natural world works, how we interact with it and how we can work to protect, restore and sustain it for the future. Topics include an overview of basic ecological principles, population, biodiversity, energy, natural resources and pollution. The course emphasis is on the science behind current environmental concerns. Social, ethical, economic, and political perspectives are considered in order to provide perspective and a fuller understanding of the issues and their solutions. Lab investigations further develop scientific and environmental understandings. Students cannot receive credit for both ENV 101 and ENV 102.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 110 | KNOW SOIL KNOW LIFE: A STUDY OF THE STUFF BENEATH OUR FEET | 4 quarter hours

(Undergraduate)

Life is all around us, the happy result of Earth's size and its location from the Sun (the "third rock from the Sun"!). Earth's size and location allows liquid water, and thus life, to exist and evolve. We study living systems in school, generally plants and animals, focusing on the interplay of biology, chemistry, and physics, and perhaps a smidgen of ecology. Life is what makes Earth unique within our solar system. But how often do we think about soil and the connection between soil and life? Soil lacks the media attention of charismatic megafauna, for example, emaciated polar bears floating on an ice floe resulting from a warming climate. And isn't soil just dirt? (note: dirt is a 'dirty' word to a soil scientist). No! Soils have an inner beauty, and soil science is a transdisciplinary field that integrates the natural and social sciences, policy, arts and the humanities. A Grand Challenge: how do we get people to care about the role of soils in their lives? This course will introduce students to the world beneath their feet and examine the roles that soil plays in their lives. Soil is the foundation our natural living world depends on, the unappreciated substance of life. We are dependent on soils, and high-quality soils depend on our wise stewardship. Soils provide food, fiber and fuels, and regulate water resources and climate. They form the foundation for roads and buildings and are used to absorb wastes of various kinds. Soils have contributed to the rise and demise of once-great civilizations, including the Mesopotamians, Holy Roman Empire, and Mayans. Unfortunately, as civilization has evolved through periods of intensive agriculture and urbanization, our soil resource has become increasingly degraded. Half of the world's agricultural soils are moderately or highly eroded. Erosion, loss of organic carbon, compaction, and salinization reduce soil's fertility and ability to hold moisture. Each year we damage another 12 million hectares through deforestation, overgrazing, intensive farming, urbanization and pollution. Soil is vital to the global food supply chain - from fashion to pharmaceuticals and energy. A basic knowledge of soil, including its physical, chemical and physical properties, its genesis, and its potentials and limitations for various uses, is essential to minimize the degradation of this valuable natural resource and to promote human health and well-being. To know soil in all its complexity and beauty is to know life.

ENV 115 | ENVIRONMENTAL GEOLOGY | 4 quarter hours (Undergraduate)

An examination of the earth's materials and structures, and the processes responsible for their formation; how geologic processes and hazards influence human activities (and vice versa); and a discussion of geologic resources and the geological aspects of waste disposal and pollution. The course includes a three-hour lab. Students cannot receive credit for both ENV 115 and ENV 116.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 116 | GEOLOGY OF THE ENVIRONMENT | 4 quarter hours (Undergraduate)

This course examines the Earth's materials and structures, and the processes responsible for their formation, as well as how geologic processes and hazards influence human activities (and vice versa), including issues associated with climate change. Besides learning about the basic geologic facts and issues, this course places an emphasis in the history and thinking behind how each major geologic concept came about through scientific processes-i.e., integration of observations with inferences. Students cannot receive credit for both ENV 115 (Environmental Geology with Laboratory) and ENV 116 (this course).

ENV 117 | EARTH THROUGH TIME WITH LABORATORY | 4 quarter hours (Undergraduate)

A general introduction to the 4.6 billion-year geologic history of planet Earth. The course scientifically explores the history of the earth from its formation to present day, the origin and transformation of rocks, internal and external geologic processes and structures, evolution and extinction of organisms, and patterns of Earth's environmental conditions through time. The course includes a three-hour lab.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 118 | EARTH THROUGH TIME | 4 quarter hours (Undergraduate)

A general introduction to the 4.6 billion-year geologic history of planet Earth. The course scientifically explores the history of the earth from its formation to present day, the origin and transformation of rocks, internal and external geologic processes and structures, evolution and extinction of organisms, and patterns of Earth's environmental conditions through time.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this course.

ENV 150 | FOUNDATIONS OF ENVIRONMENTAL STUDIES | 4 quarter hours (Undergraduate)

The purpose of this course is to introduce students to environmental studies. It presents students with an overview of the intersections between ecology, the social sciences, and the humanities that inform our vision of the rigor and power of interdisciplinary environmental studies. It draws upon the natural sciences, communication, geography, philosophy, religion, history, literature, art and design, and public policy to stress the interrelationships between human society and the natural world. Students will study the effects of the human use of the natural world and the interactions of culture, society, resources, and the environment. We will examine the social, political, and economic institutions that impact the environment. Particular attention will be paid to how the role of power and inequality contribute to environmental problems and how those problems in turn, impact certain groups more than others (e.g. citizens of undeveloped nations, people of color in urban areas).

ENV 151 | INTRODUCTION TO SUSTAINABILITY | 4 quarter hours (Undergraduate)

This course provides an interdisciplinary introduction to sustainability and examines the essential interdependence between environmental, human, and economic systems. The class focuses on the theories and practices that respect the Earth's ecological limits so that these systems remain viable now and into the future. Students will explore the interrelated environmental, social, and economic problems that we currently face at the local, national, and global scale and the solutions that individuals, governments, and institutions are implementing in an effort to ensure a sustainable future.

ENV 152 | ECOLOGICAL AND SOCIAL ECONOMICS | 4 quarter hours (Undergraduate)

In this course, students examine the role of the environment and natural resources in neoclassical, environmental and ecological economics. First, students study mechanisms for efficiently allocating scarce resources among specific alternative ends and take a brief foray into environmental economics and learn methods of resource/environmental valuation. We also discuss aspects of macroeconomics as it pertains to ecological economics. Students come away able to critically assess the benefits and drawbacks of these three ways that the economy incorporates the environment. It also encourages ethical reasoning as we discuss distribution of environmental benefits over generations and globally.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 160 | IDEAS OF NATURE | 4 quarter hours (Undergraduate)

This course is an introductory history of the ideas of nature that emerged over the last two and a half centuries in Europe and the United States. We examine how the conceptions, meanings, and values of nature today have been influenced by the Scientific and Industrial Revolutions, Romanticism, and evolutionary theory; notions of the sublime, the frontier, and wilderness; and the practices of conservation, preservation, and restoration. Also discussed are the ideological commitments of current environmentalisms, in particular sustainability.

ENV 165 | NATIONAL PARKS HISTORY | 4 quarter hours (Undergraduate)

This course is designed, in part, as intensive introduction to the history of national parks, both in the United States and abroad, and will cover a broad swath of history, from the historical antecedents that influenced the founding of the America's earliest parks to twenty-first century issues throughout the world. By necessity, this will not be an exhaustive survey of the history of all fifty-nine national parks in the United States, let alone the roughly 7,000 national parks worldwide. Instead, we will use illustrative examples to highlight key moments in national park history, including nineteenth-century intellectual movements that inspired the creation of national parks, the debates over conservation and preservation, legislative acts such as the Antiquities Act and the National Park Service Organic Act, the democratization of tourism in America, the rise of the wilderness and environmental movements, the conservative revolution, the exportation of the national park ideal throughout the burgeoning world, and the future of American national parks. The historical knowledge gained through course readings and lectures will be essential for completion of both writing assignments and the two exams.

ENV 170 | ENVIRONMENTAL ETHICS | 4 quarter hours (Undergraduate)

The environmental issues that confront us are both global and local; they involve political, economic and ethical decision-making by governments, corporations and citizens. Students will explore and evaluate diverse approaches to a range of such issues, as well as the ways different thinkers and different cultures have envisioned the relationship between human beings and the natural world-all with a view to understanding their own relationships to the natural world, their own environmental ethics.

**ENV 180 | ISSUES IN ENVIRONMENTAL DESIGN | 4 quarter hours
(Undergraduate)**

Issues in Environmental Design is an introductory course that will examine concepts, theories and practices across multiple scales of design, including architecture, landscape architecture and urban design. Students will discuss and evaluate the design decisions that compose our built environment with a focus on contemporary ideas of ecological sustainability. Examples of excellence will be explored through the examination of case studies. The underlying theme is the connection between culture and nature, and how we may reduce our negative impact on systems that support all life while building positive systems that support all life.

**ENV 181 | LANDSCAPE ARCHITECTURE | 4 quarter hours
(Undergraduate)**

This course will examine the process by which landscape architects contribute to the built environment. The course will culminate in the presentation of a student design proposal for an existing site in Chicago. In preparation, students will use literature and design examples to examine how political and aesthetic attitudes toward landscape architecture have evolved, from the pastoral focus of the 19th century to today's desire for adaptable and multifunctional spaces. Selection of readings and examples will be catered to key issues arising from the chosen design proposal site for that quarter. Students will become familiar with standard architectural representation methods (such as plan, section and model) and will learn how landscape architects engage with existing social and environmental conditions in the development of their aesthetic designs.

**ENV 182 | VISUAL ARTS & THE ENVIRONMENT | 4 quarter hours
(Undergraduate)**

This course explores how the environment and nature are represented in contemporary art and media. Through readings, lectures, and film analyses, you will also learn about how visual representations of the environment have been shaped by Western and white ecologies - and how Queer, Black, and Indigenous visual artists address this in their work. Visual ecologies, or environmental visual culture, analyze not only how environment and nature are represented in visual media, but also how these images of/on the environment constitute media ecosystems that shape the ways we understand the natural world. For instance, while audiovisual imaginaries have historically reproduced binary definitions and distinctions of gender (where men are associated to science and technology, and women are associated to nature and care), recent films, series, and art works explore increasingly fluid and inclusive visions of the environment. We will pay particular attention to how climate change, environmental degradation, interspecies relationships, survival, and reproduction are apprehended in video art, photography, performance, films, and TV series. We will examine a series of works to analyze how visual representations of the environment are influenced by collective imagination in specific social and cultural contexts, how these images shape how we interact with non-human species and environmental resources, and how these representations can contribute to ecological crises.

**ENV 183 | GENDER AND THE ENVIRONMENT | 4 quarter hours
(Undergraduate)**

This course introduces feminist, queer, and transgender perspectives on nature and the environment. Femininity and masculinity, as social constructs, constitute ways of interacting with the natural world that inform, as much as they are informed by, gender norms that may vary depending on time (history) and place (culture). Western imaginaries, specifically, have historically reproduced binary definitions and distinctions of gender (where men are associated to science and technology, and women are associated to nature and care). Three bodies of work will mainly be discussed in this course. Developed in the 1970s, "ecofeminism", or feminist eco-criticism, analyses how the domination of women and nature intersect in modern capitalist societies. Meanwhile, queer ecologies further criticize the relation between sex (nature) and gender (culture), to explore alternative ways to connect with non-human species and develop creative storytellings about interspecies systems. Lastly, the emerging field of "transecology", or transgender ecology, offers critiques of reproduction and conservation that highlight how human health and ecological disaster are mutually dependent, including through disability and within Indigenous communities. The course will include a variety of formats and media in addition to readings, such as films, series, and podcasts. By the end of the academic term, you will have developed a more critical understanding of gender as a key factor in how we relate to the environment.

**ENV 200 | CITIES AND THE ENVIRONMENT | 4 quarter hours
(Undergraduate)**

This course focuses on the interactions between urban areas and the environment. It presents a discussion of the physical setting of cities; the water, energy, air and waste disposal needs of urban areas; and the effects of urban development on air, soil, and water quality, and the health of the community of non-human organisms. In particular, it presents this topic in the context of the emerging discipline of urban ecology, and introduces the notion of cities as social ecological systems where both people and nature interact.

ENV 202 | RESOURCES, POPULATION, AND THE ENVIRONMENT | 4 quarter hours (Undergraduate)

This course explores the relationships between human society, the earth's resources, and our environment. Humans are the dominant life form on Earth. We have developed technologies that have allowed us to inhabit every continent. As a result of these technological advancements, we often view ourselves as being apart from and above the laws of nature. We are, however, part of the vast web of interdependency that characterizes all life on Earth. Our health and survival depend on the health and integrity of the whole world. Many people feel that the Earth is currently under attack by a range of human activities and an ever increasing population. Growing human populations coupled with increasing affluence in many developing countries has resulted in an increased demand for natural resources. This demand has in turn strained our global environmental systems and has resulted in environmental degradation. Human activities have resulted in alterations of our global climate and atmospheric chemistry, including greenhouse warming, depletion of the stratospheric ozone layer, and acid rain. We must be able to critically examine local and regional environmental issues in terms of their global realities and develop a holistic understanding of the population-resource-environmental degradation relationship. We must develop an appreciation for the linkages between global environmental systems and human societies in order to attain sustainable development. New technologies in environmental restoration and waste management offer hope that societies may be able to manage the consequences of their own success. To understand and solve future environmental problems requires interdisciplinary approaches in research and teaching. Unfortunately, the science underlying many of the most pressing global environmental problems is distorted by the interplay of science, politics and the media that generates public opinion. Indeed, wise environmental policy decisions not only rely on sound science but also on the ability of citizens' and policy makers' ability to critically evaluate these environmental issues.

ENV 203 | CHEMISTRY FOR ENVIRONMENTAL STUDIES | 4 quarter hours (Undergraduate)

ENV 203 is a course for Environmental Studies majors that develops the fundamental concepts of chemistry with experimental exploration in the context of societal issues. Chemistry topics include atomic structure, chemical bonding, chemical reactions, thermodynamics, and acid-base behavior. These topics are discussed on a "need-to-know" basis, embedded in discussions of air pollution, ozone depletion, global climate change, energy, water pollution, and acid rain.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 204 | ENERGY AND THE ENVIRONMENT | 4 quarter hours (Undergraduate)

This course is designed to provide students with the scientific tools necessary to understand and critically evaluate both personal and policy decisions regarding the variety of options (e.g. fossil fuel, solar, wind, etc.) for energy generation and use. The course also focuses on the environmental impacts of all forms of energy, from the extraction of fossil fuels and mineral resources from the earth, to the generation, distribution and consumption of energy, and ultimately emission of fossil fuel combustion products, notably carbon dioxide and other heat trapping gasses, to the atmosphere.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 205 | BIOLOGY FOR ENVIRONMENTAL STUDIES | 4 quarter hours (Undergraduate)

This lecture-laboratory course for Environmental Studies majors introduces the fundamental concepts of biology that are critical for the understanding of a wide range of environmental issues, such as genetic engineering, overpopulation, conservation biology, and climate change. Under the framework of evolutionary biology, the content of this course includes basic cell biology, genetics, population biology, phylogeny, ontogeny, and biodiversity.

MAT 120 or LSP 121 (or HON 180) or (MAT 130 or above) is a prerequisite for this class.

ENV 216 | EARTH SYSTEM SCIENCE | 4 quarter hours (Undergraduate)

This course focuses on three of the great spheres of the Earth (lithosphere, hydrosphere and atmosphere) and how they interact with the biosphere to create an integrated Earth system with an emphasis on how human activities impact important Earth system cycles. Students should have a basic understanding of how living organisms interact with their physical environment. Laboratory activities provide experience with the tools and methodology of systems thinking.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 217 | HUMAN IMPACTS ON THE ENVIRONMENT | 4 quarter hours (Undergraduate)

A science-based course that examines the interface between humans and the living and non-living environment, the consequences of these interactions, and options for mitigating environmental impacts.

ENV 222 | TOPICS IN ENVIRONMENTAL STUDIES | 4 quarter hours (Undergraduate)

Variable topics in environmental studies.

ENV 230 | GLOBAL CLIMATE CHANGE | 4 quarter hours (Undergraduate)

Climate change is a crucial issue facing society and involves intricate interactions between human pollution, processes in the Earth system and societal impacts. The course will cover the basic science of climate change and also consider its ethical dimensions. Solutions to climate change that incorporate sound science and social behavior will be explored through student-driven projects.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 235 | ENVIRONMENTAL EDUCATION: THEORY AND PRACTICE | 4 quarter hours (Undergraduate)

This course, led by educators from the Chicago Academy of Sciences and its Peggy Notebaert Nature Museum (PNNM), examines theories and models of environmental education (EE) and the status of environmental literacy in the US. The goal is to equip you, as future environmental professionals, to effectively engage audiences in environmental topics and issues. In this experiential learning course, you will participate in and observe aspects of program implementation, development, and evaluation at PNNM. These experiences serve as an additional "text" for you to reflect on and connect with course content, and ultimately utilize in your future career paths. As a result of this course, you will be able to: 1. Articulate trends in environmental education theory and practice across a range of educational settings 2. Connect course content (readings, lectures, and discussion) to firsthand experiences with PNNM program development, implementation, and evaluation 3. Apply EE best practices in the development of an educational experience for audiences and topics aligned with PNNM.

ENV 240 | INTRODUCTION TO HORTICULTURE | 4 quarter hours (Undergraduate)

This course introduces the principles and core practices involved in the culture of plants. Topics include the uses of plants and horticultural practices throughout history; the botanical and horticultural classification of plants; plant structure and function, growth and regulation; environmental requirements for plant growth; genetic modification of plants; plant reproduction and propagation; and plant pests and diseases. The course also considers environmental issues in horticulture including xeriscaping, biodiversity and the use of native plants, water management and rain gardens and hydroponics and container gardens.

ENV 245 | URBAN AND COMMUNITY AGRICULTURE | 4 quarter hours (Undergraduate)

This course will acquaint students with the challenges, opportunities, practices, and transformative potential of urban agriculture. Taking an interdisciplinary, case-study approach, this course will explore issues such as food security, community gardening, farmers markets, the locavore food movement, entrepreneurial aspects of urban agriculture, methods of urban food production, and food consumption patterns. The course will meet in the classroom and on-site at the DePaul urban farm and greenhouses. In addition, students are expected to spend several hours each week outside of class time engaged in hands-on experience in urban farming at DePaul or at local sites arranged with the instructor.

ENV 250 | APPLIED ECOLOGY | 4 quarter hours (Undergraduate)

This course provides a broad survey of ecological principles and methods of lab and field investigation. Topics include the distribution and abundance of organisms in nature including those factors that influence population size, growth, and regulation; species interactions; community organization and change; and ecosystem level processes that move matter and energy among the living and non-living parts of the environment. The lecture also integrates ecological theory with natural history and environmental issues. Lab goals are to help students 1) acquire experience in ecological methods and sampling techniques, 2) better understand ecological concepts, 3) develop skills in hypothesis testing, experimental design, and the analysis of ecological data and 4) gain an increased awareness of and appreciation for the complexity, diversity, and structure of the natural world.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 260 | ENVIRONMENTAL DATA ANALYSIS | 4 quarter hours (Undergraduate)

This course will provide students with skills to implement the most common statistical methods used in the environmental sciences. It emphasizes statistical literacy and develops statistical thinking, examines real data to address authentic questions, and fosters active learning by experiencing statistics; student design studies, collect data, analyze data using graphs and numerical tools, interpret results, communicate statistical inferences with written and oral reports.

MAT 120 or LSP 121 (or HON 180) or MAT 130 or above is a prerequisite for this class.

ENV 261 | MIXED METHODS IN ENVIRONMENTAL STUDIES | 4 quarter hours (Undergraduate)

Environmental studies as a discipline is increasingly interdisciplinary and requires knowledge and skills in not only the natural sciences, social sciences, and humanities, but also quantitative and qualitative analytical methods. In this class, students will learn how to effectively blend different theories and methodologies to examine interactions between humans and the environment. Skills gained will include survey design and implementation, qualitative interviewing and analysis, photo interpretation, case study, ethical considerations in environmentally-focused human subjects research, and more.

ENV 250 is either a prerequisite or co-requisite for this class.

ENV 294 | SECOND YEAR SEMINAR | 2 quarter hours (Undergraduate)

The purpose of this course is to advance ecological literacy. The seminar presents the study of the environment to students in a philosophical, cultural, and historical context, and in addition makes them aware of some foundational ideas of the discipline through a selection of new and classic literature. (2 quarter hours)

ENV 300 | PLANT IDENTIFICATION | 4 quarter hours (Undergraduate)

An in-depth overview of plant families and species in the Chicagoland area. Lectures will focus on morphology of plants, evolutionary relationships among plant families, and terminology of plant structures. Students will use botanical keys and manuals for the area to identify plants and will learn collection techniques. Plant species will be collected in their natural habitats during field trips.

ENV 250 or BIO 215 is a prerequisite for this class.

ENV 305 | ANIMAL DIVERSITY | 4 quarter hours (Undergraduate)

This course investigates the diversity of animals, including invertebrates and vertebrates. Discussions include the origin and evolution of animals, species concepts, developmental biology, taxonomic classification, phylogenetic systematics, and conservation biology.

ENV 205 (or BIO 192) is a prerequisite for this class.

ENV 310 | ENVIRONMENTAL SOIL SCIENCE | 4 quarter hours (Undergraduate)

An examination of the physical, chemical, biological and engineering properties of soils, their genesis and classification, how they function as sites of waste disposal, and their role in global agricultural production. The course includes a three-hour lab and a mandatory Saturday field trip.

ENV 216 AND (ENV 203 OR (CHE 130 AND CHE 131) are prerequisites for this class.

ENV 315 | PLANT ECOLOGY | 4 quarter hours (Undergraduate)

This course focuses on how plants are affected by abiotic factors in the environment and interactions with other organisms. Goals are to improve students' abilities to understand research papers, present overviews of current research, design experiments, and analyze data. The course includes weekly labs with greenhouse experiments or field trips followed by data analysis. Topics include germination ecology, pollination biology, competition between plants, and effects of herbivory.

ENV 250 or BIO 215 is a prerequisite for this class.

ENV 316 | CHEMISTRY OF EARTH SYSTEMS | 4 quarter hours (Undergraduate)

This class focuses on the impact of pollution on the Earth's ability to provide clean air, water and food for human consumption. The industrialization of the economy during the last 150 years has greatly increased the amount of waste that is sent into the four Earth spheres: the atmosphere, hydrosphere, lithosphere and biosphere. These emissions directly harm organisms and also cycle back to pollute essential ecosystem services provided by the Earth. This class will consider the source, transport, transformation and ultimate fate of pollution emitted into the air, water and solid Earth. Examples will include relatively simple cases (agricultural pesticides harming birds) and range to more complex interactions (depletion of stratospheric ozone by CFCs and the increase in harmful ultraviolet radiation). The laboratory component will be project-based and some work can be completed outside of the assigned lab time.

ENV 216 and CHE 132 are a prerequisite for this class.

ENV 320 | CONSERVATION BIOLOGY | 4 quarter hours (Undergraduate)

Conservation biology is an interdisciplinary field that has developed in response to the challenge of preserving species and ecosystems. With a specific focus on the Chicago area, students in this course will: assess key threats to biodiversity and the challenges associated with conservation of native communities, evaluate how different institutions implement conservation in the region, and engage with the primary literature related to the field of conservation biology.

BIO 215 or ENV 250 is a prerequisite for this class.

ENV 322 | ECOSYSTEM ECOLOGY | 4 quarter hours (Undergraduate)

This course will introduce students to the conceptual and methodological tools of ecosystem ecology. The course will focus on understanding the fundamental structure and function of ecosystems but will also address very recent debates on the economic value of ecosystem services, the role of biological diversity in maintaining ecosystem processes, and the consequences of stressed and degraded ecosystems for human welfare. Finally, we assess the role of ecosystem ecology in designing sustainable restoration projects. The course includes a weekly lab.

BIO 215 or ENV 250 is a prerequisite for this class.

ENV 330 | FIELD METHODS | 4 quarter hours (Undergraduate)

A laboratory course designed to educate students in the execution and application of field techniques used in environmental science. Emphasis on the areas of ecology, earth science, and urban forestry.

ENV 331 | URBAN ENVIRONMENTAL MONITORING | 4 quarter hours (Undergraduate)

As the world's population shifts into cities, there is an increasing interest in measuring the quality of the urban environment. From air quality to soundscapes, urban dwellers want to live in an environment that is healthy and sustainable. However, deteriorated environmental conditions are widespread and often unfairly distributed with regards to race, ethnicity and class. Assuming that knowledge is power, person-centered environmental monitoring can identify hotspots, highlight injustices and lead to improvements. The class will focus on a new generation of wearable/deployable sensors that use cell phones and other technology advances to measure air, sound and visual quality. This project-driven class will have students personally investigating an urban environmental question using wearable sensors or easily deployable environmental monitors.

(MAT 120) or (LSP 121 or ON 180) or (MAT 130 or above) is a prerequisite for this class.

ENV 340 | URBAN ECOLOGY | 4 quarter hours (Undergraduate)

Urban ecology has been described as an "upstart discipline." This is because it is relative new, and challenges the historical emphasis that scientific ecology has placed on pristine and wilderness locations. Thus, this novel discipline examines the way ecological ideas can increase our understanding of cities in ways that assist us in making cities more sustainable - cleaner, healthier and more biodiverse. We also examine how ecology as a discipline can be broadened by its encounter with disciplines that have historically paid more attention to the city: urban sociology, anthropology, geography, economics, demography, architecture and planning. In particular we develop the notion of the system as a "social ecological system. This course has a required lab; and some Saturday field trips.

BIO 215 or ENV 250 is a prerequisite for this class.

ENV 341 | URBAN FORESTS AS SOCIAL-ECOLOGICAL SYSTEMS | 4 quarter hours (Undergraduate)

Urban forests include all the trees, forests, and greenspaces in cities and towns. Urban forest management, or urban forestry, is the discipline/profession that seeks to plan and manage this green infrastructure in order to provide ecological, economic, and social benefits to all residents. Trees and vegetation have long been protected and planted in cities and towns for a variety of reasons. Recently, urban forestry has expanded to be a lead focus in the broader arena of urban ecology and urban ecosystem management, with a clear goal of creating sustainable ecosystems. This course will look at urban forests through the lens of social-ecological systems (SESSs) of linked human and natural components, with a focus on teaching students the hands-on skills of urban forest management. The course will utilize the talents of a number of guest speakers and field experience facilitators who are professionals in urban forestry to give students a practical, real world introduction to the subject. The DePaul University campus and the City of Chicago and surrounding region will serve as our field laboratory to view an actively managed urban forest. This course meets learning outcomes 1 and 4 for the Environmental Science and Studies majors, outcomes 5 through 8 for the Environmental Science major, outcome 6 in the Environmental Studies major, and outcome 9 for the sustainability concentration.

ENV 250 (or permission of instructor) is a prerequisite for this course.

ENV 343 | MAMMALOLOGY | 4 quarter hours (Undergraduate)

Humans are mammals. Understanding about other mammalian groups is vital to understanding our species and the impact that our species is having on other mammals and their environments. Mammals are excellent models for ecological, evolutionary, and conservation related questions. Understanding basic evolutionary history, ecology, identification, and patterns of mammals are essential to for tackling ecology, conservation, and evolutionary related research at all spatial and temporal scales. Traditional field and museums-based techniques and skills are quickly becoming ubiquitous in modern Academia despite their importance in the middle of the Anthropocene and the current climate change era. This class will focus on the understanding of mammals in with an emphasis on the mammals of the Midwestern US, however, you will be given a window on the mammals of the world. You will also learn a variety of museum techniques.

ENV 344 | ENVIRONMENTAL JUSTICE AND ADVOCACY | 4 quarter hours (Undergraduate)

This course explores the roles of individuals and organizations in advocacy through the lens of environmental justice, particularly as power arrangements facilitate or impede consensus building. The course examines how legislation is written and how this process has impacted communities of color. Special attention is paid to advocacy techniques such as lobbying, movement-building, public education and litigation.

ENV 345 | URBAN AGRICULTURE | 4 quarter hours (Undergraduate)

This course will acquaint students with the challenges, opportunities, practices, and transformative potential of urban agriculture. Taking an interdisciplinary, integrative, case-study approach, this course will explore issues such as food access, food security, food deserts, community gardening, farmers markets, locavore food movement, entrepreneurial aspects of urban agriculture, method of food production, community nutrition, and food consumption patterns. The course will meet both in the classroom and on-site at an urban farm, where students will work in all aspects of the farm as well as learn to organize communities in an effort to help them create food security and access to healthy food systems.

ENV 346 | HERPETOLOGY | 4 quarter hours (Undergraduate)

Herpetology is the study of amphibians and non-avian reptiles. In the lecture component, students will learn about the origin, evolution, systematics, physiology, behavior, ecology, and conservation of amphibians and reptiles. In the laboratory component, students will learn how to identify amphibian and reptile species native to Illinois and some field techniques used for sampling reptile and amphibian populations.

ENV 350 | ENVIRONMENTAL SCIENCE AND STUDIES CAPSTONE | 4 quarter hours (Undergraduate)

This course examines basic core concepts of and current issues in environmental science drawing on perspectives of the liberal studies curriculum, including reflectiveness, value consciousness, critical and creative thinking, and a multicultural perspective.

Status as a senior Environmental Studies or Environmental Science major is a prerequisite for this class.

ENV 355 | INTRODUCTION TO ENVIRONMENTAL HEALTH | 4 quarter hours (Undergraduate)

Study of the environment factors that influence health. Topics include air and water pollution, global population and local community dynamics, toxicology, infectious and chemical agents, radiation, and management.

ENV 359 | ADVANCED ENVIRONMENTAL DATA ANALYSIS WITH R | 4 quarter hours (Undergraduate)

Advanced topics in design and analysis of environmental experiments using the free data science software, R. Students will apply univariate and multivariate statistics to publicly available environmental data, interpret results, make appropriate inferences from data, and communicate findings in written and oral format.

ENV 260 (or equivalent) is a prerequisite for this class.

ENV 360 | RESEARCH METHODS | 4 quarter hours (Undergraduate)

This course is intended for junior year Environmental Science majors who are preparing for their senior thesis research projects. Topics include the nature and philosophy of science, experimental design, scientific ethics, and scientific writing. Students will prepare a thesis research proposal on a topic to be determined in the first week of the course.

Status as an Environmental Science major with junior standing or above is a prerequisite for this class.

ENV 361 | RESEARCH IN ENVIRONMENTAL SCIENCE | 4 quarter hours (Undergraduate)

ENV 361 is for students who are currently working with an ENV faculty mentor on a research project. Restricted to students majoring in Environmental Science or Environmental Studies; permission of instructor required.

ENV 362 | SENIOR THESIS | 2 quarter hours (Undergraduate)

ENV 362 is designed for Environmental Science students working on their senior thesis. (2 quarter hours)

ENV 360 is a prerequisite for this class.

ENV 390 | SPECIAL TOPICS IN ENVIRONMENTAL SCIENCE | 2-4.5 quarter hours (Undergraduate)

Variable topics.

ENV 398 | TRAVEL/STUDY | 4-8 quarter hours (Undergraduate)

Foreign and domestic study tours by special arrangement with sponsoring programs: Variable credit.

ENV 399 | INDEPENDENT STUDY | 1-4 quarter hours (Undergraduate)

Variable credit. Permission of instructor and chair required.

ENV 400 | PLANT IDENTIFICATION | 4 quarter hours (Graduate)

An in-depth overview of plant families and species in the Chicagoland area. Lectures will focus on morphology of plants, evolutionary relationships among plant families, and terminology of plant structures. Students will use botanical keys and manuals for the area to identify plants and will learn collection techniques. Plant species will be collected in their natural habitats during field trips. Recommended prerequisite is ENV 250 or BIO 215 or the equivalent.

ENV 401 | INTRODUCTION TO URBAN BIODIVERSITY MANAGEMENT | 4 quarter hours (Graduate)

A fundamental reorientation in biodiversity conservation practice in the past generation concerns the recognition that the contemporary urban environment affords some exceptional opportunities for biodiversity conservation. Though many species avoid human dominated environments, there is now an acknowledgment that many species can tolerate or even thrive in metropolitan areas. Coyotes, and several species of raptors, for example, provide an illustration of this emerging diversity. Furthermore, the open space often set aside in cities afford opportunities for the rehabilitation of habitat in close proximity to people. This course will introduce the perspectives emerging from conservation biology, conservation planning, ecosystem management, restoration ecology, and reconciliation ecology that contribute to the thriving practice of urban biodiversity management.

**ENV 402 | URBAN ECOLOGY | 4 quarter hours
(Graduate)**

Urban ecology has been described as an "upstart discipline". This is because it is relatively new, and challenges the historical emphasis that scientific ecology has placed on pristine and wilderness locations. Thus, this novel discipline examines the way ecological ideas can increase our understanding of cities in ways that assist us in making cities more sustainable - cleaner, healthier and more biodiverse. We also examine how ecology as a discipline can be broadened by its encounter with disciplines that have historically paid more attention to the city: urban sociology, anthropology, geography, economics, demography, architecture and planning. In particular, we explore "social ecological system" analysis as a way of framing question concerning people and nature in metropolitan settings.

**ENV 403 | ECOLOGICAL DATA ANALYSIS WITH R | 4 quarter hours
(Graduate)**

This course will provide students with the skills to implement the most common statistical methods used in the environmental sciences. It builds upon students' prior knowledge of statistical thinking, and addresses real data to address the sorts of questions students are likely to encounter in their professional lives. The course fosters active learning by experiencing statistics; student design studies, collect data, analyze data using appropriate software, and amplifies students' ability to interpret results, communicate statistical inferences with written and oral reports.

**ENV 404 | APPLIED ECOLOGICAL MANAGEMENT PRACTICUM | 4 quarter hours
(Graduate)**

Successful environmental management requires a balanced approach to the theoretical framing of problems and the practical implementation of solutions. Scientists can fail to be informed by phenomena that emerge in the field of practice, and conversely practitioners at times do not draw upon the best available scientific evidence. This course focuses both on the productive tension between theory and practice in environmental management, as well as the integration of ecological and social science in the applied discipline. Collaborating with multiple organizations in the region, the class consists of field visits, professional seminars and guest lectures, case studies, hands-on workshops and practicum research. Central themes include restoration ecology, traditional ecological knowledge, environmental justice, climate science, urban biocultural diversity, and volunteer stewardship.

**ENV 405 | INTERNSHIP | 4 quarter hours
(Graduate)**

A course of study is set out in agreement with a supervising professor that outlines an internship experience, including reflective assignments. Permission of instructor and chair required.

**ENV 406 | INDEPENDENT PROJECT | 4 quarter hours
(Graduate)**

A course of study is set out in agreement with a supervising professor that will inculcate the student with a very specific set of knowledge, or skill set.

**ENV 407 | RESEARCH FOR MASTER THESIS | 4 quarter hours
(Graduate)**

This course prepares students for thesis research. In agreement with research supervisory the topics may include accounts of the nature and philosophy of science, experimental design, scientific ethics, and scientific writing. Students will prepare a thesis research proposal on a topic to be determined in the first week of the course.

**ENV 410 | ENVIRONMENTAL SOIL SCIENCE | 4 quarter hours
(Graduate)**

An examination of the physical, chemical, biological and engineering properties of soils, their genesis and classification, how they function as sites of waste disposal, and their role in global agricultural production. The course includes a three-hour lab and a mandatory Saturday field trip. Recommended prerequisites for this class are LSP 120 or LSP 121 or MAT 130 or the equivalent and CHE 103 or CHE 130 or ENV 203.

**ENV 415 | PLANT ECOLOGY | 4 quarter hours
(Graduate)**

This course focuses on how plants are affected by abiotic factors in the environment and interactions with other organisms. Goals are to improve students' abilities to understand research papers, present overviews of current research, design experiments, and analyze data. The course includes weekly labs with greenhouse experiments or field trips followed by data analysis. Topics include germination ecology, pollination biology, competition between plants, and effects of herbivory. Recommended prerequisites are ENV 250 or BIO 215 or the equivalent.

**ENV 420 | CONSERVATION BIOLOGY | 4 quarter hours
(Graduate)**

Conservation biology is an interdisciplinary field that has developed in response to the challenge of preserving species and ecosystems. With a specific focus on the Chicago area, students in this course will: assess key threats to biodiversity and the challenges associated with conservation of native communities, evaluate how different institutions implement conservation in the region, and engage with the primary literature related to the field of conservation biology. Recommended prerequisite is ENV 250 or BIO 215.

**ENV 422 | ECOSYSTEM ECOLOGY | 4 quarter hours
(Graduate)**

This course will introduce students to the conceptual and methodological tools of ecosystem ecology. The course will focus on understanding the fundamental structure and function of ecosystems but will also address very recent debates on the economic value of ecosystem services, the role of biological diversity in maintaining ecosystem processes, and the consequences of stressed and degraded ecosystems for human welfare. Finally, we assess the role of ecosystem ecology in designing sustainable restoration projects. Recommended prerequisite is ENV 250 OR BIO 215.

**ENV 425 | ANIMAL DIVERSITY | 4 quarter hours
(Graduate)**

This course investigates the diversity of animals, including invertebrates and vertebrates. Discussions include the origin and evolution of animals, species concepts, developmental biology, taxonomic classification, phylogenetic systematics, and conservation biology.

ENV 205 (or BIO 192) is a prerequisite for this class.

**ENV 440 | URBAN ECOLOGY | 4 quarter hours
(Graduate)**

In this course we examine the way ecological ideas can increase our understanding of cities in ways that assist us in making cities more habitable - cleaner, healthier and more biodiverse. We will pay considerable attention to the ways in which ecology can be broadened by its encounter with disciplines that have historically paid more attention to the city: urban sociology, anthropology, economics, demography, architecture and planning. This course has a required lab; some Saturday field trips.

ENV 441 | URBAN FORESTS AS SOCIAL-ECOLOGICAL SYSTEMS | 4 quarter hours (Graduate)

Urban forests include all the trees, forests, and greenspaces in cities and towns. Urban forest management, or urban forestry, is the discipline/profession that seeks to plan and manage this green infrastructure in order to provide ecological, economic, and social benefits to all residents. Trees and vegetation have long been protected and planted in cities and towns for a variety of reasons. Recently, urban forestry has expanded to be a lead focus in the broader arena of urban ecology and urban ecosystem management, with a clear goal of creating sustainable ecosystems. This course will look at urban forests through the lens of social-ecological systems (SESSs) of linked human and natural components, with a focus on teaching students the hands-on skills of urban forest management. The course will utilize the talents of a number of guest speakers and field experience facilitators who are professionals in urban forestry to give students a practical, real world introduction to the subject. The DePaul University campus and the City of Chicago and surrounding region will serve as our field laboratory to view an actively managed urban forest. Recommended prerequisite is ENV 250 OR BIO 215.

ENV 443 | MAMMALOLOGY | 4 quarter hours (Graduate)

Humans are mammals. Understanding about other mammalian groups is vital to understanding our species and the impact that our species is having on other mammals and their environments. Mammals are excellent models for ecological, evolutionary, and conservation related questions. Understanding basic evolutionary history, ecology, identification, and patterns of mammals are essential to for tackling ecology, conservation, and evolutionary related research at all spatial and temporal scales. Traditional field and museums-based techniques and skills are quickly becoming ubiquitous in modern Academia despite their importance in the middle of the Anthropocene and the current climate change era. This class will focus on the understanding of mammals in with an emphasis on the mammals of the Midwestern US, however, you will be given a window on the mammals of the world. You will also learn a variety of museum techniques.

ENV 446 | HERPETOLOGY | 4 quarter hours (Graduate)

Herpetology is the study of amphibians and non-avian reptiles. In the lecture component, students will learn about the origin, evolution, systematics, physiology, behavior, ecology, and conservation of amphibians and reptiles. In the laboratory component, students will learn how to identify amphibian and reptile species native to Illinois and some field techniques used for sampling reptile and amphibian populations.

ENV 450 | THESIS RESEARCH | 1-8 quarter hours (Graduate)

This course is designed for students undertaking research projects in conjunction with their thesis.

ENV 490 | SPECIAL TOPICS | 2-4 quarter hours (Graduate)

Variable topics. Variable credit.

ENV 499 | INDEPENDENT STUDY | 2-4 quarter hours (Graduate)

Permission of instructor and chair required. Variable credit.

ENV 502 | CANDIDACY CONTINUATION | 0 quarter hours (Graduate)

Students who have completed their coursework and are actively working on the requirements for the Master's thesis or final independent project must enroll in candidacy continuation each quarter of the academic year until the Master's requirement has been completed. This course carries the equivalent of half-time enrollment status. Course requires graduate program director approval and proof of work each quarter. Pass/No Pass grading. (0 credit hours)

ENV 503 | CANDIDACY MAINTENANCE | 0 quarter hours (Graduate)

This course is meant for Master's students not actively working on their thesis or final independent project. It is only used to maintain active student status. It will not give the student full- or half-time enrollment status and will not permit deferment of student loans. Course requires graduate program director approval each quarter. (0 credit hours)

ENV 506 | SUSTAINABILITY SCIENCE: ENVIRONMENTAL LIMITS, HUMAN NEEDS, & SYSTEMS THINKING | 4 quarter hours (Graduate)

This course aims to orient students to the problems of the 'Anthropocene': a new geologic epoch characterized by climate change, increasing human population, pollution of air, water and soil, overuse of natural resources, and underserving of human needs. This course will help students think about solutions to these challenges through the discipline of 'sustainability science' and build 'systems thinking' skills. **Graduate standing is a prerequisite for this class.**