Environmental Studies Program

Why study environmental studies?

The Environmental Studies Program at the University of Kansas, established in 1971, is one of the oldest environmental studies programs in the country. The KU Environmental Studies Program provides a rigorous interdisciplinary education and stimulates exchange concerning the environment from natural science, social science, and humanities perspectives. Learning Pathways (http://esp.ku.edu/pathways/), thematic areas of study that match student interest to the environmental expertise of our faculty, are a key aspect of our unique program.

The program provides students with the tools they need to investigate environmental phenomena, including soil sampling and freshwater ecology to policy-making and social science. Environmental Studies students learn how to put together what other disciplines take apart.

Our pedagogy is focused on engaged learning. Learning Pathways (http://esp.ku.edu/pathways/) concentrations provide options for a deeper dive within our major, with recommended courses, faculty, and experiences. In addition to a vibrant classroom curriculum (http://esp.ku.edu/curriculum/), Environmental Studies students are encouraged to participate in the many exciting experiential learning opportunities that KU offers, including study abroad (http://esp.ku.edu/study-abroad/), undergraduate research (http://esp.ku.edu/independent-research-projects/), co-curricular projects (http://esp.ku.edu/projects/), and internships (http://esp.ku.edu/internships/).

Environmental Studies equips students to get involved in the intellectual life of the university and to connect to environmental projects in the surrounding community. These experiences enhance the success of students along their path to graduation and rewarding careers.

Undergraduate Programs

This interdisciplinary major gives students a fundamental knowledge of the human environment, the dimensions of human impact on the environment, and holistic approaches to solving problems resulting from this impact. The human environment includes all facets of human activity affecting the environment, such as philosophical and ethical issues, environmental resource use and misuse, population biology, and the chemistry of the atmosphere.

Electives

The goals of the program are

1. To provide a holistic view of the environment, one in which the synergistic nature of perturbations, natural and anthropogenic, can be understood and
2. To provide the technical and evaluative skills for active participation in an environmental career.

The environment is the central theme around which a liberal arts education is focused.

Students may declare an interest in environmental studies or a major in environmental studies by filling out the appropriate forms. CLAS Interest Code and Major Declaration forms are available from College Advising & Student Services (https://collegeadvising.ku.edu/), 109 Strong Hall, or in the environmental studies office. Students are strongly encouraged to declare an environmental studies major as soon as possible.

Electives provide the opportunity to specialize, and these can be chosen by consulting the various pathways in the major (http://esp.ku.edu/pathways/), which contain a list of faculty members associated with the pathway who are available to help decide on electives and environmental careers. An elective approval form must be submitted to 109 Strong Hall before a student is allowed to graduate. Forms may be obtained from the environmental studies office. Except for study abroad, a maximum of 8 hours of nonclassroom course work may be counted toward electives (e.g., internship or research).

Exceptions and Substitutions

All substitutions must be approved by a student’s environmental studies faculty advisor. A student must submit a requirement substitution form to the environmental studies faculty advisor. Forms can be obtained from the environmental studies office.

Internships

Internships allow majors to develop new skills and test their abilities and educational backgrounds. Students can assess their career objectives in professional settings. Internships are done in city, county, state, and federal agencies and in environmental organizations and private companies or agencies. Students are encouraged to participate at the end of the sophomore or junior year. Completion of an internship by the end of the junior year provides an opportunity to make career changes and final elective selections before the senior year. It is not possible to participate in an internship after graduation. The applicant must have a grade-point average of 2.5 or above, must have completed 12 hours of required environmental studies courses, and must have a suitable internship opportunity. A maximum of 3 hours may be applied to the 12 hours of required electives.

Professional Science Masters

The Professional Science Masters professional graduate degree is designed for graduates of bachelor’s programs in physical/natural sciences, environmental studies, civil/environmental engineering or related fields who are currently employed or wanting to be employed in private firms, public agencies, and not-for-profit organizations that address a range of environmental issues. Key foci in the science curriculum of this program are environmental impact assessment; soils, water, and ecosystems science; geospatial analysis; environmental health and policy; and an understanding of environmental law and policy and the regulatory environment.

The P.S.M. degree is a unique professional degree grounded in natural science, technology, engineering, mathematics and/or computational sciences and designed to prepare students for direct entry into a variety of career options in industry, business, government, or non-profit organizations. P.S.M. programs prepare graduates for high-level careers in science that have a strong emphasis on such skill areas as management, policy, entrepreneurship, communication and project management. P.S.M. programs consist of 2 years of academic training in an emerging or interdisciplinary area, along with a professional component that may include internships and “cross-training” in workplace skills.
Graduate Certificate in Environmental Studies

The Graduate Certificate in Environmental Studies is designed to give students already admitted to a graduate program at KU the opportunity for interdisciplinary coursework in Environmental Studies, spanning the humanities, natural/physical sciences, and social sciences.

Students wishing to be accepted into the Environmental Studies Certificate program must already be admitted to a graduate program at KU. Applicants must write a cover letter to the Environmental Studies Graduate Director explaining their interest in the certificate and how interdisciplinary training in Environmental Studies helps meet individual goals in research and training. This statement is to be attached on page 9 of the application. On page 6, please upload a copy of your advising report. A graduate GPA of 3.0 or higher is required, but provisional admittance can be granted for one semester to new graduate students.

Students must also have their thesis or dissertation advisor write a letter of recommendation to be admitted to the certificate program. The letter must address the importance of the certificate in the student's overall research and training plan. In addition to purposes of admission, this letter will also be used to consider the applicant for scholarship funding.

Graduate Certificate in Environmental Assessment

The Certificate in Environmental Assessment is designed for graduates of bachelor’s programs in physical/natural sciences, environmental studies, civil/environmental engineering or related fields who are currently employed in private firms, public agencies, and not-for-profit organizations that address a range of environmental issues. Key foci in the science curriculum of this program are environmental impact assessment; soils, water, and ecosystems science; geospatial analysis; environmental health and policy; and an understanding of environmental law and policy and the regulatory environment.

Graduate Certificate in Environmental Justice

The Certificate in Environmental Justice is designed for graduates of bachelor’s programs in environmental studies or related fields who want to address issues such as social, economic, and political marginalization of minorities and low income populations. Key foci in the curriculum of this program are environmental law, governance, policy and planning, sustainability, development, and political ecology.

For admissions and application information for the P.S.M. and the Graduate Certificates in Environmental Assessment and Environmental Justice, go to the KU Edwards Campus website (https://edwards.ku.edu/professional-science-masters-concentration-environmental-assessment-graduate-certificate/).

Students who are interested in enrolling in graduate level coursework in the Environmental Studies Program without formal admission to a graduate program at KU are encouraged to apply for graduate non-degree seeking student status. See the department’s admission (http://esp.ku.edu/admission/) webpage for further details.

Courses

EVRN 103. Environment and History. 3 Hours H.
Nature is our oldest home and newest challenge. This course surveys the environmental history of the earth from the extinction of the dinosaurs to the present with a focus on the changing ecological role of humans. It analyzes cases of ecological stability, compares cultural attitudes toward nature, and asks why this ancient relationship seems so troubled. (Same as HIST 103.) LEC.

EVRN 140. Global Environment I: The Discovery of Environmental Change. 5 Hours GE3N / U / LFE.
This interdisciplinary course and laboratory sections survey the foundations of environmental understanding and the process of scientific discovery from perspectives that combine the principles and methodologies of the humanities, physical, life and social sciences. Key topics include the history of environmental systems and life on earth, the discovery of biotic evolution, ecological change, and climate change. Laboratory sections apply the principles and methodologies of the humanities, physical, life and social sciences to earth systems and the development of environmental understanding using historical and present-day examples. (Same as GEOG 140 and HIST 140.) LEC.

EVRN 142. Global Environment II: The Ecology of Human Civilization. 5 Hours GE3S / U.
This interdisciplinary course and its laboratory sections survey the history of humanity's relationship with the natural world over the long term from perspectives that combine the principles and methodologies of the humanities, physical, life and social sciences. Key topics include the evolution of Homo sapiens and cultural systems; the development of hunter, gatherer, fisher, agricultural, and pastoral lifeways; the ecology of colonialism and industrial civilization, and the emergence of ideological and ethical perspectives on the relationship between nature and culture. Laboratory sections apply the principles and methodologies of the humanities, physical, life and social sciences to humanity's engagement with the global environment using historical and present-day examples. (Same as GEOG 142 and HIST 142.) LEC.

EVRN 144. Global Environment I: Discovery of Environmental Change, Honors. 5 Hours GE3N / U / LFE.
This interdisciplinary course surveys the foundations of environmental understanding and the process of scientific discovery from perspectives that combine the principles and methodologies of the humanities, physical, life and social sciences. Key topics include the history of environmental systems and life on earth, the discovery of biotic evolution, ecological change, and climate change. Laboratory sections apply the principles and methodologies of the humanities, physical, life and social sciences to earth systems and the development of environmental understanding using historical and present-day examples. (Same as GEOG 144 and HIST 144.) Open only to students admitted to the University Honors Program or by permission of instructor. LEC.

EVRN 145. Global Environment II: The Ecology of Human Civilization, Honors. 5 Hours GE3S / U.
This interdisciplinary course and its laboratory sections survey the history of humanity's relationship with the natural world over the long term from perspectives that combine the principles and methodologies of the humanities, physical, life and social sciences. Key topics will include the evolution of Homo sapiens and cultural systems; the development of hunter, gatherer, fisher, agricultural, and pastoral lifeways; the ecology of colonialism and industrial civilization, and the emergence of ideological and ethical perspectives on the relationship between nature and culture. Laboratory sections apply the principles and methodologies of the humanities, physical, life and social sciences to the humanity's engagement with the global environment using historical and present-day
examples. (Same as GEOG 145 and HIST 145.) Open only to students admitted to the University Honors Program or by permission of instructor. LEC.

EVRN 148. Scientific Principles of Environmental Studies. 3 Hours NB GE3N / N.
This course provides the scientific knowledge necessary to understand the changing relationships between humans and the natural environment, with an emphasis on the assessment of current environmental problems and critical evaluation of potential solutions. Major topics include fundamental scientific concepts and principles, interactions among the biological and physical components of the environment, implications of a growing human population, water resources, the atmosphere, climate, and energy sources. (Same as GEOG 148.) LEC.

EVRN 149. Scientific Principles of Environmental Studies, Honors. 3 Hours NB GE3N / N / LFE.
This course presents an overview of our understanding of environmental processes and issues. Topics include scientific principles, resource issues, pollution and global change, among others. This course gives students a rigorous understanding of interactions between humans and their environment and provides students with a scientific basis for making informed environmental decisions. An honors section of EVRN 148, designed for superior students. (Same as GEOG 149.) Prerequisite: Membership in the University Honors Program or approval of instructor required. LEC.

EVRN 150. Environment, Culture and Society. 3 Hours SC GE3S / S.
An introduction to geographic approaches to the study of the environment, emphasizing societal and cultural factors that influence human interaction with the biosphere, hydrosphere, lithosphere, and atmosphere. The course involves analysis of a broad range of contemporary environmental issues from the local to global scales. (Same as GEOG 150.) LEC.

EVRN 170. Introduction to Kansas Landscapes. 1 Hour N.
A course focused on the land and environment of Kansas. Field trips provide students with direct experience of the diverse landscapes in our area. Coursework also emphasizes the dynamic nature of the current landscape and the natural and cultural processes that have shaped it. LEC.

EVRN 171. Understanding Kansas Landscapes. 1 Hour N.
An introduction to the research methods used by scholars in diverse fields, applied to environmental issues introduced in EVRN 170. Prerequisite: EVRN 170. LEC.

EVRN 172. Kansas Landscape Projects. 1 Hour N.
Students participate in the design and execution of a simple research project focused on a local environmental topic. Prerequisite: EVRN 170, and EVRN 171. LEC.

EVRN 177. First Year Seminar: _____ 3 Hours GE11 / U.
A limited-enrollment, seminar course for first-time freshmen, addressing current issues in Environmental Studies. Course is designed to meet the critical thinking learning outcome of the KU Core. First-Year Seminar topics are coordinated and approved by the Office of First-Year Experience. Prerequisite: First-time freshman status. LEC.

EVRN 200. Study Abroad Topics In: _____ 1-6 Hours S.
This course is designed for the study of special topics in Environmental Studies. Coursework must be arranged through the Office of Study Abroad. May be repeated for credit if content varies. LEC.

EVRN 304. Environmental Conservation. 3 Hours NE GE3N / N.
A survey of current methods of describing and modeling the function, structure, and productivity of natural and anthropogenically modified earth resource systems, along with a discussion of contemporary views of what constitutes a natural landscape. Fundamental natural science principles about the interplay among lithospheric, atmospheric, hydrospheric, and biospheric components of earth systems are emphasized. Uses of natural resources, including fossil fuels, minerals, and water, are described with attention to the earth’s total energy budget. Human activities that affect preservation, conservation, and multiple uses of earth regions receive attention. Systems under stress through population and other contemporary forces serve as examples. (Same as GEOG 304.) LEC.

EVRN 306. Global Environmental Literature. 3 Hours AE42 / H.
An examination of a variety of literary and other representations of human and non-human environments and environmentalism. Particular attention will be paid to how race, gender, class, sexuality, and geography produce and are produced by those representations. (Same as ENGL 306 and GIST 306.) Prerequisite: Prior completion of the KU Core Written Communication requirement. Recommended: Prior completion of one 200-level English course. LEC.

EVRN 320. Environmental Policy Analysis. 3 Hours N.
An historical and analytical study of the formulation, implementation, and consequences of environmental policy in the United States. Attention will be directed at relevant interest groups, issues specific to both rural and urban populations, relationships between national policies and international organizations concerned with environmental problems. Prerequisite: EVRN 140/GEOG 140/HIST 140 or EVRN 142/GEOG 142/HIST 142; or EVRN 144/GEOG 144/HIST 144 or EVRN 145/GEOG 145/HIST 145; or EVRN 148/GEOG 148; or concurrent enrollment. LEC.

EVRN 330. Sculpture Intercepting the Waste Stream. 3 Hours N.
An introductory course using engaged learning to exploring the genre of ecological art practice (eco-art.) Class focuses on the waste stream particularly as it affects the Kansas River. Through remediation events, students build works of art from trash, in turn auctioned for environmental efforts. Creative attention is focused on ecological imbalance. (Same as SCUL 330.) Prerequisite: Visual Art major or minor, or instructor permission. LAB.

EVRN 332. Environmental Law. 3 Hours U.
An introduction to how the American legal process improves, transforms, and damages the natural environment. Emphasizes and compares shifting responsibilities of legal forces and institutions: judges and litigants, legislators and statutes, agencies and administrations, and citizens and regulated entities. Prerequisite: EVRN 140/GEOG 140/HIST 140 or EVRN 142/GEOG 142/HIST 142; or EVRN 144/GEOG 144/HIST 144 or EVRN 145/GEOG 145/HIST 145; or EVRN 148/GEOG 148; or concurrent enrollment. LEC.

EVRN 333. Introduction to Soil Geography. 4 Hours N / LFE.
This course focuses on the properties and processes of soils as they occur in their environment. The student is introduced to the nature of soil as it functions as a body; genesis of soils; properties of soil solids, especially colloids; soil chemical composition, properties, and reactions; interaction between solid, liquid, and gaseous components in soils; plant-soil-water relationships; biological interactions with soil; classification of soils; and the distribution of soils on the landscape. Not open to students who have taken EVRN 535 or GEOG 535. (Same as GEOG 335.) Prerequisite: GEOG 104 or GEOL 101 or consent of instructor; BIOL 100 and CHEM 130 or CHEM 190 and CHEM 191 recommended. LEC.

EVRN 336. Ethics, Ideas and Nature. 3 Hours AE51 / H.
This course examines the ethical frameworks developed for thinking about, using, and protecting the natural world. Examples of topics include indigenous approaches to nature, the history of ecological ideas, environmental movements, the role of the state in managing resources, utilitarianism and progressivism, environmental lawmaking, wilderness advocacy, nature and theology, the rights of nature, and
environmental justice. Students are introduced to the theories of duty ethics, justice ethics, utilitarianism, and rights ethics, and required to apply ethical decision making to contemporary and historical environmental issues. Multiple perspectives on the history of human interactions with nature demonstrate the importance of reflecting upon the value systems inherent in human-centered environmental ethics and nature-centered environmental ethics. (Same as HIST 363.) LEC.

EVRN 338. Permaculture Design. 6 Hours N.
Students learn how a local, sustainable design system known as permaculture design creates an ecologically sound and economically viable way of living. The course consists of lecture, field, and practicum sessions. Lecture topics include food security, permaculture ethics, ecological principles, system design, sustainable soils, food production, food forests, earth works, and construction of human habitats. LEC.

EVRN 347. Environmental History of North America. 3 Hours H.
A survey of changes in the landscape and in people's perceptions of the natural world from 1500 to present. Topics include agroecology, water and energy, the impact of capitalism, industrialism, urbanization, and such technologies as the automobile and the origins of conservation. (Same as HIST 347.) LEC.

EVRN 350. Global Environmental Justice. 3 Hours.
Drawing on interdisciplinary fields of study, this course surveys a wide range of situated environmental injustices and environmental justice movements associated with toxic dumping, oil extraction and mining, climate change, deforestation, agri-business, and tourism. As students gain an understanding of the connections and differences among specific situations, and between environmental justice and other forms of environmentalism, they engage with salient theoretical and practical questions. The content of the course will also be shaped by the interests of students. For example, each student will present on an environmental justice movement of her/his own choosing, on the connections between it and other movements we have been studying, and on the ways this movement can help us understand some of the key practical and theoretical questions raised by environmental justice struggles. This course is offered at the 300 and 600 level with additional assignments at the 600 level. Not open to students with credit in EVRN 650. Prerequisite: EVRN 140 or EVRN 142 or EVRN 144 or EVRN 145 or EVRN 336; or permission of instructor. LEC.

EVRN 362. Art and Ecology: Inhabiting the Ecosphere. 3 Hours N.
An introductory course exploring the genre of ecological art practice (eco-art) through a series of engaged learning projects that focus on habitat, the waste stream and natural resources, local ecologies and interventionist creative strategies that focus attention on ecological imbalance. (Same as SCUL 362.) Prerequisite: Visual Art major or minor, or instructor permission. LAB.

EVRN 363. Introduction to Environmental Hydrology and Water Resources. 3 Hours N.
Water is vital to life on earth. In this course we cover components of the water or "hydrologic" cycle, how management has altered them, and how they are predicted to change with the changing climate. We discuss the evolution of water policy, its implications for management and the economic impact of human perturbation on water. We study the physical processes that govern the water cycle, learn how they are measured, and estimate hydrologic fluxes. (Same as GEOG 336.) Prerequisite: GEOG 104 or GEOL 101. LEC.

EVRN 365. Invention of the Tropics. 3 Hours AE42 / H.
This course surveys the history of the tropical environment and its diverse peoples from early European encounters until the current boom in extractivism and ecotourism. It focuses on portrayals of the tropics in historical travel accounts and films. Through these sources, we will seek to understand cross-cultural interactions, and the ways in which science, technology, and tourism have reconstructed these environments over time. Case studies are drawn from Latin America, Africa, Oceania, and/or Asia. (Same as HIST 365.) LEC.

EVRN 371. Environmental Geopolitics. 3 Hours S.
This course examines how human relationships with the biophysical world are politicized. Examines key contributions to debates surrounding environmental security, resource conflicts, and related issues, as well as geopolitical assumptions on which these debates build. (Same as GEOG 371 and GIST 371.) LEC.

EVRN 374. Vulnerability and Adaptation. 3 Hours S.
The course objective is to understand and analyze human adaptation to environmental change by focusing on disasters and climate change. Each semester, the course rotates topics ranging from oil spills, hurricanes, sea-level rise to infectious disease. It provides undergraduate students with research experience and service learning, and offers opportunities for certificates through the Center for Undergraduate Research and the Center for Civic and Service Responsibility at KU. Students learn theories relevant to the case study, work in groups to generate research themes, conduct literature search and review, learn research methods, and write and present their work. LEC.

EVRN 385. Environmental Sociology. 3 Hours S.
This course invites students to study society and its impact on the environment. Environmental problems are social problems. This course will address such items as social paradigms, theories, inequalities, movements, and research. (Same as SOC 385.) LEC.

EVRN 386. Sociology of Global Food. 3 Hours U.
The Sociology of Global Food offers a critical examination of the global food system since the Industrial Revolution. Topics include the industrialization of agriculture, sustainable agriculture, and the role of food and agriculture in organizing society. This course discusses the emergence of current debates around food and agriculture including food activism, technological developments, human/environment relationships, and labor issues. There is a lab component to this course. (Same as SOC 386.) Prerequisite: Junior standing. LEC.

EVRN 390. Disaster and Culture. 3 Hours.
This class explores representations of environmental disasters within various forms of cultural expression. Cultural beliefs and practices not only influence the ways environmental disasters are understood and responded to, but also shape the social dynamics that determine a population's vulnerability and resilience to hazards. Thus, while an earthquake may trigger a disaster, its impact largely will be influenced by social factors that pre-date the actual seismic event. The course will apply cultural materials (e.g., film, science writing, literature, policy statements, etc.) that emerge from specific case studies to analyze the social causes and effects of disaster, while drawing on an interdisciplinary set of tools and perspectives (from sociology, literary studies, science, economics, etc.) that animates inquiry. LEC.

EVRN 405. Kansas Power. 3 Hours.
Where does our energy come from? How can we optimize our use of renewable and nonrenewable sources of energy? What are the drivers moving us to more renewable sources of energy? What are the impediments? In this course we will explore the use of fossil fuels, nuclear, wind, geothermal and solar energy in Kansas. We will visit nearby power plants, and alternative energy companies. Students will be expected to design an energy plan for a local entity, and present their ideas. Prerequisite: EVRN 140 and EVRN 142. LEC.
EVRN 410. Environmental Applications of Geographic Information Systems. 3 Hours N.
An introduction to the use, display, and analysis of spatial data. Students will acquire a foundational skill-set in geographic information systems and remote sensing using industry-standard GIS software and will apply these skills using environmental data and case studies. Prerequisite: EVRN 148 or EVRN 149 or GEOG 148 or GEOG 149; EVRN 103 or HIST 103, EVRN 150 or GEOG 150 or EVRN 347 or HIST 347. LEC.

EVRN 412. Ecology: Fundamentals and Applications. 3 Hours.
An introduction to the principles of ecology, with an emphasis on applications. Major topics include physiological and functional ecology, population and community dynamics, biogeochemistry, and ecosystems ecology. Intended for students seeking B.A. or B.G.S. degrees. Prerequisite: EVRN 140 or EVRN 144 or EVRN 148 or EVRN 149 or consent of the instructor. LEC.

EVRN 414. Principles of Ecology. 3 Hours N.
Study of the principles underlying species population density changes, community structure and dynamics, biogeochemical cycles, and energy flow and nutrient cycling in ecosystems. (Same as BIOL 414.) Prerequisite: BIOL 152 or BIOL 153, or consent of the instructor. LEC.

EVRN 420. Topics in Environmental Studies: ______. 1-6 Hours N / LFE.
Courses on special topics in Environmental Science and/or Policy. These courses may be lecture, discussions, or readings. Students may enroll in more than one interest group but may enroll in a given interest group only once. LEC.

EVRN 425. Global Water Scarcity. 3 Hours S.
Though natural factors are introduced, this course focuses primarily on the human factors that contribute to global water scarcity. This course also discusses the consequences of water scarcity and its effects on society. Prerequisite: EVRN 148 or permission of instructor. LEC.

EVRN 445. Introduction to Environmental Health. 3 Hours.
This course is designed to provide a foundation for understanding how the natural and built environment affect human health in industrialized and developing countries by examining the impact of physical, chemical, and biological factors external to humans. Students will gain an understanding of the interaction of individuals and communities with the environment, the potential impact on health of environmental agents, and specific applications of concepts of environmental health. (Same as HSCI 445.) LEC.

EVRN 451. Ecosystems Stewardship. 3 Hours.
This course sits at the crossroads between the discipline of ecology and the practice of stewardship, specifically the Indigenous Knowledge that is born from these landscapes over millennia in a place. Students will interact with research that establishes scientific foundations as a method to engage environmental problems in the anthropocene. The concept of stewardship is a core tenet of this course, students will engage with many approaches of stewardship, centering primarily on humans as a part of, not apart from, the environment. This course is offered at the 400 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 451 or EVRN 751, GEOG 451 or GEOG 759, BIOG 451 or BIOL 759. (Same as BIOL 451 and GEOG 451.) FLA.

EVRN 460. Field Ecology. 3 Hours N / LFE.
An introduction to research methods for environmental science. The course includes fieldwork in diverse ecosystems (lakes, streams, forests, prairies). It emphasizes the development of skills in data analysis and interpretation that are essential to a full understanding of environmental issues. Enrollment limited to environmental studies majors, or by instructor permission. Prerequisite: Junior or Senior standing, completion of the natural sciences requirement of the KU Core (GE3N), and either EVRN 320 or EVRN 332. FLD.

EVRN 490. Internship in Environmental Studies. 1-8 Hours AE61 / N.
Supervised practical experience in a specific environmental area of interest. The advisor will schedule regular meetings to evaluate progress and provide assistance. A written summary of the internship experience and evaluation will be prepared independently by the student, a representative of the cooperating agency, and the advisor. Total credit may not exceed 8 hours. Prerequisite: Junior standing and consent of program director. Restricted to declared Environmental Studies majors. Restricted to students with a 2.5 overall GPA or above. INT.

EVRN 510. Advanced Environmental Applications in Geospatial Techniques. 3 Hours H/N.
This course focuses on applying advanced geospatial mapping and analysis techniques to "real-world" environmental issues. Course content may include lecture/lab time on advanced geospatial topics; a major class project, small-group projects, or individual projects; or half-semester internships with state agencies or campus entities that will culminate in an individual project. The specific nature of projects will be driven largely by student interest and ability, as well as agency/center needs. Prerequisite: EVRN 410 or equivalent course; or permission of the instructor. LEC.

EVRN 528. Remote Sensing of the Environment I. 4 Hours N.
Introduction to study of the environment through air photos and satellite imagery, including principles of remote sensing, interactions of electromagnetic energy with the atmosphere and earth's surface, aerial photography, satellite systems, and sensors (electro-optical, thermal, and radar). Emphasis in the latter part of the course is on such applications as global monitoring, land cover mapping, forestry, agriculture, and oceanography. Laboratory emphasizes visual interpretation of aerial photography and satellite imagery and an introduction to digital image processing in the department's NASA Earth Science Remote Sensing Laboratory. (Same as GEOG 526.) Prerequisite: MATH 101 or equivalent. GEOG 358 recommended. LEC.

EVRN 528. Environmental Justice and Public Policy. 3 Hours S.
This course provides an overview of environmental justice, both as a social movement and as a public policy initiative. Environmental justice examines the distribution of environmental externalities across different socio-economic and racial groups. We will discuss several different public policy areas that have been impacted by the environmental justice movement: hazardous waste facility siting, urban redevelopment and Brownfields, transportation policy, and Native American sovereignty. We will also touch upon international environmental policy in an environmental justice context. Throughout the course we will evaluate empirical issues in studying environmental justice. (Same as POLS 528.) Prerequisite: POLS 306, or a statistics class, or consent of instructor. LEC.

EVRN 530. Biodiversity Discovery and Assessment. 2 Hours N.
An integrated lecture and laboratory course designed to provide an overview of modern methods in biodiversity exploration and discovery. Lectures cover the theory and practice of planning fieldwork in remote locations, documenting species and their natural history, how museum collections are made, calculating and comparing species richness estimates, and the process of describing and naming new species. The laboratory component provides students experience in documenting species and their natural history, processing and curating samples of natural history specimens, and the statistical analysis of biodiversity data. (Same as BIOL 530.) Prerequisite: BIOL 152, 153, or equivalent, or permission of instructor. LEC.

EVRN 531. Tropical Fieldwork in Biodiversity Discovery. 1 Hour U.
An introduction to modern field methods of assessing biodiversity. Fieldwork employs insects and various field methods to estimate and
compare species diversity between different habitats and field sites. Taught at different sites in tropical South America over Spring Break. Contact Undergraduate Biology, or the Office of Study Abroad. (Same as BIOL 531.) Prerequisite: BIOL 152, 153, or equivalent, or permission of instructor. Concurrent or prior enrollment of BIOL 530 is strongly encouraged. LAB.

EVRN 535. Soil Geography. 4 Hours N / LFE.
A broad study of the principles and properties of soils and their distribution on the landscape. Topics covered include: pedology, clay mineralogy, soil physics, soil chemistry, management of soils, soil biology, taxonomy, and soil geomorphology. Laboratory section and a field project are required. Not open to students who have taken GEOG 335 or EVRN 335. (Same as GEOG 535.) Prerequisite: GEOG 104 or GEOL 101 or consent of the instructor; BIOL 100 and CHEM 130 or CHEM 190 and CHEM 191 recommended. LEC.

EVRN 536. Environmental Remote Sensing. 3 Hours NE.
Covers fundamentals of remote sensing, including electromagnetic radiation principles and data collection and processing, followed by an introduction to the various remote sensing techniques and their application in understanding and managing environmental systems. Exercises are provided for students to be actively involved in evaluating, critically analyzing and interpreting images and data to determine implications for practice. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 736. Prerequisite: Junior or Senior standing. LEC.

EVRN 537. Water Resource Sustainability. 3 Hours NE.
Provides a framework for learning about our water future and ways we might define and achieve sustainability in water use and management. Concerns of ethics, culture, economics, politics, and environmental health will be discussed within the contexts of issues such as the global water crisis, water footprints, water pollution, human water systems, water security, and sustainable water technologies. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 737. Prerequisite: Junior or Senior standing. LEC.

EVRN 538. Soil Chemistry. 3 Hours N / LFE.
This course examines the chemical properties and processes of soils and methods of evaluation. Topics include solid and solution speciation, mineral solubility, soil colloidal behavior, ion exchange, surface complexation, soil salinity and sodicity, soil acidity, oxidation-reduction reactions, and kinetics of soil chemical processes. (Same as GEOG 538.) Prerequisite: GEOG 335 or GEOG 535 or EVRN 335 or EVRN 535, CHEM 135 or CHEM 195 and CHEM 196, MATH 125, or consent of the instructor. LEC.

EVRN 540. Ecohydrology. 3 Hours N.
Ecohydrology is the discipline that answers real world hydrologic and biologic questions through integrating knowledge from hydrology, ecology, atmospheric science and biogeochemistry. We focus on the key concepts, methodological approaches and analytical techniques utilized in ecohydrology to understand and quantify: plant water use, evolution of hydrologic properties, groundwater-surface water interactions, controls on landscape patterns, spatial and temporal patterns of soil moisture and nutrient concentrations, and vegetation competition. Students should leave the class having developed critical skills in: 1) reviewing scientific literature, 2) collecting environmental samples, 3) analyzing ecohydrologic data, 4) writing a scientific research paper, 5) working collaboratively and independently. (Same as GEOG 540.) Prerequisite: GEOG 104 or GEOL 101 or EVRN 363 or GEOG 336 or permission of instructor. LEC.

EVRN 542. Ethnobotany. 3 Hours S.
Course will involve lectures and discussion of Ethnobotany - the mutual relationship between plants and traditional people. Research from both the field of anthropology and botany will be incorporated in this course to study the cultural significance of plant materials. The course has 7 main areas of focus: 1) Methods in Ethnobotanical Study; 2) Traditional Botanical Knowledge - knowledge systems, ethnolinguistics; 3) Edible and Medicinal Plants of North America (focus on North American Indians); 4) Traditional Phytochemistry - how traditional people made use of chemical substances; 5) Understanding Traditional Plant Use and Management; 6) Applied Ethnobotany; 7) Ethnobotany in Sustainable Development (focus on medicinal plant exploration by pharmaceutical companies in Latin America). (Same as ANTH 582 and ISP 542.) Prerequisite: EVRN 142, EVRN 145, EVRN 148, ANTH 150/151, ANTH 160/162/360 or permission of instructor. LEC.

EVRN 543. Natural Hazards and Environmental Risks. 3 Hours NE.
This course investigates the geophysical processes of the earth-atmospheric system that can create disastrous impacts on human life, society, and economics. Hazards, including earthquakes, tsunamis, floods, hurricanes, mass movements, wildfires, and many others, are examined by analyzing spatial and temporal dynamics as well as any precursory indicators that may be present. Attention is also given to management and mitigation strategies. Case studies are utilized to examine interaction between society and natural hazards. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 743. Prerequisite: Junior or Senior standing. LEC.

EVRN 550. Environmental Economics. 3 Hours U.
This course provides an overview of the theory and empirical practice of economic analysis as it applies to environmental issues. Topics include externalities (a type of market failure), the valuation of nonmarket goods, the practice of benefit-cost analysis, and the efficiency and cost effectiveness of pollution control policies. Most importantly, the course permits students to perform economic field research, using state-of-the-art techniques in a manner accessible to undergraduate students. (Same as ECON 550.) Prerequisite: ECON 104 or ECON 105 or ECON 142 or ECON 143. LEC.

EVRN 553. Comparative Environmental Politics. 3 Hours S.
This course compares environmental politics and policies across a number of countries, including those in North America, Western Europe, East Asia, and Latin America. (Same as POLS 553.) LEC.

EVRN 555. Energy and Environment. 3 Hours NE.
This interdisciplinary course provides students with a broad understanding of the current energy system, including its challenges, with focus on changing global energy needs, current energy sources, developing and emerging renewable energy sources, and their economic, environmental, and societal implications. Analysis of energy fundamentals, fossil fuel exploration and use, nuclear energy, renewable energy sources, and subsequent environmental impacts. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 755. Prerequisite: Junior or Senior standing. LEC.

EVRN 563. U.S. Environmental Thought in the 20th Century. 3 Hours H.
Explores both leading and dissident ideas that Americans have had about the natural world since 1900. Broad chronological periods are explored in some depth, including the Progressive Era, New Deal, Cold War, the Sixties, and the Reagan Eighties. The course uses articles and books, as well as visual and aural forms of communication. Commercial speech, as
well as scholarly and literary works, are considered. (Same as HIST 563.)
Prerequisite: EVRN 148 or HIST 129, or by permission of instructor. LEC.

EVRN 577. The Andean World. 3 Hours H.
The Andean environment is defined by its mountains, but includes all of
the earth’s major biomes: from tropical rainforest to the world’s oldest
and driest desert. These diverse landscapes have nurtured one of the
most ancient and durable, yet diverse sets of Indigenous cultural lifeways.
Most of the Andes was governed by a single power during the Inca and
Spanish colonial eras, but the region is now divided between seven
independent states with their own regional traditions. The Andean World
has long been recognized as a laboratory for understanding the relations
between nature and culture, and the tensions between tradition and
revolutionary change. This course will examine the history of this region
from a long-term perspective, from its indigenous roots to contemporary
struggles over globalization and extractivism. (Same as HIST 577,
ISP 577 and LAC 577.) Prerequisite: Prior 300+ level course in related
discipline (ANTH, EEB, EVRN, HIST, LAC, SPAN, etc.) or permission
of instructor. LEC.

EVRN 611. Water Quality, Land Use, and Watershed Ecosystems. 3
Hours N.
Water quality issues are integrated with land use planning and the
development of watershed management strategies. Interrelationships
among the hydrologic cycle, atmospheric deposition, nutrient
transformations and pesticide use are examined in regards to stream,
lake, and groundwater quality. Prerequisite: CHEM 110 or CHEM 130
and BIOL 414, or consent of instructor. LEC.

EVRN 615. Capstone Project. 3 Hours AE61 / N.
The capstone project provides students with a broad-based,
interdisciplinary educational experience and allows them to integrate and
synthesize the knowledge they have gained in their environmental studies
major. It rejoins the cohort that has separately pursued the BA/BGS and
BS tracks and places them in situations in which they address real world
environmental issues with a team approach and produce professionally
meaningful analytical reports. Prerequisite: Junior standing; EVRN 320,
EVRN 332, and EVRN 460. Restricted to declared Environmental Studies
majors. LEC.

EVRN 616. Environmental Impact Assessment. 3 Hours N.
This course provides an overview of environmental laws and regulations.
Additional focus is given to the process described in the National
Environmental Policy Act (NEPA). Students will learn when NEPA is
triggered, the difference between Environmental Impact Statements (EIS)
and Environmental Assessments (EIA), and how to write an EIS/EIA.
Prerequisite: An introductory course in environmental law, or consent
of instructor. LEC.

EVRN 620. Environmental Politics and Policy. 3 Hours S.
Analysis of environmental politics and the formulation and implementation
of environmental policy. Examines the history and development of
environmental politics as well as current trends. Themes include
interest groups, business interests, political institutions, and specific
environmental policy issues. (Same as POLS 624.) LEC.

EVRN 624. Independent Study. 1-9 Hours AE61 / N.
A research course, in any of the fields of environmental studies, consisting
of either experimental research, original policy analysis, or the preparation
of an extensive paper based on library investigation. Project topic to be
agreed upon in advance with supervising faculty member. Prerequisite:
Consent of instructor. IND.

EVRN 625. Honors Research in Environmental Studies. 3 Hours
AE61 / N.
A course giving eligible majors the opportunity to earn Departmental
Honors by engaging in an intensive program of study leading to an
original piece of research. Prerequisite: Senior standing, approval of
the Environmental Studies Program, the Honors Project Director, and
an overall 3.25 cumulative grade point average during the semester of
enrollment. Restricted to declared Environmental Studies majors. IND.

EVRN 628. The Politics of Public Health. 3 Hours S.
This course examines the social, institutional and political context of public
health policy in the United States. We will examine factors that shape
the nation’s public health, explore the role of government in reducing risk
and promoting well being, and analyze the major institutions responsible
for monitoring, protecting and promoting general public health. Themes
include the social determinants of health, health disparities, emerging
infectious diseases, food safety, transportation, and environmental
health. (Same as POLS 628.) Prerequisite: POLS 110 and POLS 306 are
recommended. LEC.

EVRN 630. Sculpture Intercepting the Waste Stream. 3 Hours N.
An introductory course using engaged learning to exploring the genre
of ecological art practice (eco-art.) Class focuses on the waste stream
particularly as it affects the Kansas River. Through remediation events,
students build works of art from trash, in turn auctioned for environmental
efforts. Creative attention is focused on ecological imbalance. (Same as
SCUL 630.) Prerequisite: Graduate standing or permission of instructor.
LAB.

EVRN 635. Soil Physics. 3 Hours N.
Provides theoretical and practical foundations for understanding physical
properties and processes of variably-saturated porous media. Focus is
on the transport, retention, and transformation of water, heat, gas, and
solutes through the soil. We examine modern vadose zone measurement
methods, analytical tools, and numerical models for data collection and
interpretation. (Same as GEOG 635.) Prerequisite: GEOG 335 or EVRN
335; or GEOG 535 or EVRN 535, and MATH 125, PHSX 114; or consent
of instructor. LEC.

EVRN 636. Globalization and Environment. 3 Hours.
The focus is on the sociological facets of global environmental problems
(e.g., climate change, biodiversity, fresh water problems, toxic waste;
invasive species) and especially their relationship to globalization,
growth, and what environmental sociologists have called the “human
exemptionalist model.” We address global environmental problems,
political divisions over them, environmental movements and justice,
and adaptation and mitigation strategies. The sociological literature on
these issues and different environmental social theories are discussed
(e.g., ecological modernization, treadmill theory, metabolic rift). Special
attention is given to the impact of globalization and expansion of the
global economy relative to the biosphere and consequent spikes in the
consumption of resources and production waste. (Same as SOC 635.)
Prerequisite: SOC 104 or EVRN 103 or EVRN 140 or permission of the
instructor. LEC.

EVRN 640. Natural Resource Management from an Indigenous
Perspective. 3 Hours.
The purpose of this course is to provide students with a solid
understanding of how crucial the management of natural resources is,
with emphasis on Indigenous communities. Indigenous communities are
often ignored in such courses even though these peoples have distinctive
views of how resources should be managed. This course allows students
to focus on case studies and philosophical principles that compare
management techniques derived from European based science with those
derived from the cultural traditions and beliefs of Indigenous peoples and
strategies that incorporate Indigenous perspectives in responses and Indigenous communities throughout the world with a focus on tactics and An examination of the impact of environmental justice and security in EVRN 673. Environmental Justice. 3 Hours NW / U. permission of instructor. LAB. interventionist creative strategies that focus attention on ecological habitat, the waste stream and natural resources, local ecologies and (eco-art) through a series of engaged learning projects that focus on An introductory course exploring the genre of ecological art practice of the natural sciences requirement of the KU Core (GE3N). LAB. diversity ecosystems (lakes, streams, forests, prairies). Assignments and EVRN 460, formatted for summer term. The course includes fieldwork in the context of global land-use patterns. Discussion of current research of net primary productivity. The role of both natural and anthropogenic topics include major classes of pollutants, environmental problems, and environmental solutions that must be dealt mechanisms of action, toxicity testing, and environmental assessment. communes and ecosystems. Topics include major classes of pollutants, movement, distribution and fate of pollutants in the environment, mechanisms of action, toxicity testing, and environmental assessment. LEC.
EVRN 735. Scientific Communication. 3 Hours.
Principles of English communication skills for the professional scientist. The course begins by exploring the role of narrative in all forms of scientific communication; it then applies the use of narrative tools to scientific writing, message honing and speaking. The course covers written and verbal communication of primary research. Students must have an independent research project on which to focus their communication assignments. (Same as BIOL 735.) LEC.

EVRN 736. Environmental Remote Sensing. 3 Hours.
Covers fundamentals of remote sensing, including electromagnetic radiation principles and data collection and processing, followed by an introduction to the various remote sensing techniques and their application in understanding and managing environmental systems. Exercises are provided for students to be actively involved in evaluating, critically analyzing and interpreting images and data to determine implications for practice. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 536. Prerequisite: Graduate standing. LEC.

EVRN 737. Water Resource Sustainability. 3 Hours.
Provides a framework for learning about our water future and ways we might define and achieve sustainability in water use and management. Concerns of ethics, culture, economics, politics, and environmental health will be discussed within the contexts of issues such as the global water crisis, water footprints, water pollution, human water systems, water security, and sustainable water technologies. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 537. Prerequisite: Graduate standing. LEC.

EVRN 740. Soil Science for Environmental Assessment. 3 Hours.
Provides students with a solid understanding of soils in the environment, particularly as it relates to environmental assessment. Topics include soil geomorphology, soil physics/chemistry/biology, management of soils, and soil contaminants. Prerequisite: CHEM 130 or CHEM 190 recommended or consent of the instructor. LEC.

EVRN 743. Natural Hazards and Environmental Risks. 3 Hours.
This course investigates the geophysical processes of the earth-atmospheric system that can create disastrous impacts on human life, society, and economics. Hazards, including earthquakes, tsunamis, floods, hurricanes, mass movements, wildfires, and many others, are examined by analyzing spatial and temporal dynamics as well as any precursory indicators that may be present. Attention is also given to management and mitigation strategies. Case studies are utilized to examine interaction between society and natural hazards. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 543. Prerequisite: Graduate standing. LEC.

EVRN 745. Environmental Data Analysis and Statistics. 3 Hours.
Survey of common statistical methods for analyzing environmental data. Includes techniques for environmental monitoring, impact assessment, and site reclamation, as well as methods for handling censored data, time series, and spatial analysis. Sampling design, data interpretation, and presentation of statistical results will be emphasized. Prior coursework or practical experience in statistics is expected. Prerequisite: Permission of instructor. LEC.

EVRN 747. Fluvial Geomorphology. 3 Hours.
This course develops an understanding of the research processes as applied to river systems by means of qualitative and quantitative research methods and approaches to solve problems. Applications of fluvial principles to river management and stream restoration are examined, as well as interactions between land use and geomorphic processes. Prerequisite: Graduate standing. LEC.

EVRN 750. Environmental Air Quality Assessment. 3 Hours.
Addresses scientific, regulatory, and technical aspects of air quality monitoring, including pollutant formation and dispersion, pollution control, national emissions standards, and methods for monitoring pollutants and air quality. Prerequisite: CHEM 130 or CHEM 190 recommended or consent of the instructor. LEC.

EVRN 751. Ecosystems Stewardship. 3 Hours.
This course sits at the crossroads between the discipline of ecology and the practice of stewardship, specifically the Indigenous Knowledge that is born from these landscapes over millennia in a place. Students will interact with research that establishes scientific foundations as a method to engage environmental problems in the anthropocene. The concept of stewardship is a core tenet of this course, students will engage with many approaches of stewardship, centering primarily on humans as a part of, not apart from, the environment. This course is offered at the 400 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 451 or EVRN 751, GEOG 451 or GEOG 759, BIOL 451 or BIOL 759. (Same as BIOL 759 and GEOG 759.) LEC.

EVRN 755. Energy and Environment. 3 Hours.
This interdisciplinary course provides students with a broad understanding of the current energy system, including its challenges, with focus on changing global energy needs, current energy sources, developing and emerging renewable energy sources, and their economic, environmental, and societal implications. Analysis of energy fundamentals, fossil fuel exploration and use, nuclear energy, renewable energy sources, and subsequent environmental impacts. This course is offered at the 500 and 700 level with additional assignments at the 700 level. Not open to students with credit in EVRN 555. LEC.

EVRN 771. Project Management for Science and Technical Managers. 3 Hours.
Students will learn to use current project planning tools to develop project plans that aid in bringing a project to completion on time and within budget. They will demonstrate the ability to manage projects within a science organization. LEC.

EVRN 772. Organizational Management and Leadership in Science and Technical Organizations. 3 Hours.
Explores concepts and practices in leadership, organizational behavior and change management. Emphasis is placed on understanding dynamics of individuals and groups in organizational structures focused on research and innovation. Students will tackle organizational culture, management approaches, performance-building, and creativity and innovation management in science organizations. LEC.

EVRN 773. Organizational Communication and Supervision in Science and Technical Organizations. 3 Hours.
Explores the duties and responsibilities of a supervisor/manager. Addresses management of an integrated team, recruitment and interviewing, professional development of employees, performance management, effective workplace communications; collaboration, and managing organizational conflict. LEC.

EVRN 774. Financial Management in Science and Technical Organizations. 3 Hours.
The goal of this course is to gain an understanding of finance, budget, and accounting in a science organization. The student will learn how to interpret and understand basic financial statements; how to make good decisions based on them; learn essential accounting concepts and characteristics of accounting systems; and budgeting/forecasting in a science-based organization. LEC.
EVRN 775. Technical Communication for Scientists. 1 Hour.
Addresses challenges and approaches of communicating science concepts and results to technical and non-technical as well as internal and external audiences. Focuses on techniques to improve the effectiveness of written and oral communication, including technical writing of project and research proposals, scientific presentations, and effective workplace communications. LEC.

This course provides an overview of basic patent law, the patent process, patent interpretation (claims and prior art) and intellectual property law in science. LEC.

EVRN 777. Professional Development for Science Managers. 1 Hour.
Addresses professional development of the scientist as managers. Students will develop a personal and professional development plan and understand how to apply it to their own professional career, future career transitions, and lifelong career progression. LEC.

EVRN 778. Topics in Science and Technical Management. 1-3 Hours.
Addresses special topics in Science Management. Students may enroll in more than one interest group but may enroll in a given interest group only once. LEC.

EVRN 814. Professional Science Masters Environmental Assessment Capstone I. 1 Hour.
A culminating experience to develop a workforce project and produce a written report to be presented orally to a committee that may include an industry member. Students will develop an applied workforce project in the student's place of employment for full-time employees, or an internship or similar individual project for full-time students or students who are not employed in the area of study. This course will initiate the process of project development and will be taken prior to a student's final semester. This project is to be continued in EVRN 815 in the last semester of the student's graduate career. Prerequisite: Minimum 20 credit hours completed in program. SEM.

EVRN 815. Professional Science Masters Environmental Assessment Capstone II. 2 Hours.
A culminating experience to develop a workforce project and produce a written report to be presented orally to a committee that may include an industry member. Students will develop an applied workforce project in the student's place of employment for full-time employees, an internship or similar individual project for full-time students or students who are not employed in the area of study. The students will compile their project results in a formal written report and will give an oral presentation to the Environmental Studies faculty (2 minimum) and the student's employer or mentor. Prerequisite: EVRN 814. SEM.

EVRN 915. Capstone. 3 Hours.
The goal of this research seminar is to discuss individual students' research, culminating in the completion of a paper in Environmental Studies for presentation at a professional meeting and/or publication in a professional journal. SEM.