Undergraduate Courses

AMS 210 - American Places with Wilderness Places (3 Cr.)

(GEN. ED. #11)

Almost no one today disputes the importance of preserving wild tracts of land. While there's disagreement about the size, location and uses of wilderness areas, it's hard to imagine anyone arguing that we should open every acre in America to development. This shared conviction that there's something valuable about wilderness is of fairly recent origin. For example, the very mountains that we celebrate for their majestic beauty were once viewed as "ugly protuberances" that defaced the natural landscape. This course will examine America's changing perceptions of wild landscapes, from the early settlers, who viewed the "howling wilderness" as the devil's den, to our own view of wilderness areas as places of recreation. This examination of how writers, visual artists, philosophers, and early environmentalists changed America's attitudes towards wild landscape offers a striking case study in how our relationship to nature is shaped by culture. Variable. Department.

ANT 232 - Political Ecology: Culture, Politics, and Environmental Change (3 Cr.)

(ES 230)

This course examines various interpretations of political ecology, outlining the crucial theoretical and methodological problems in the field. Emphasis will be placed on the interpretation that views political ecology as an analytical tool that seeks both to unravel the political and cultural forces at work in environmental change and to provide for a more comprehensive understanding of how global and local environmental issues relate to each other.
Prerequisite: ES 140 /PSC 140 , or ANT 107 , or permission of instructor. Variable semesters. Department.

ART 262 - Nature Into Art: The Cultural Dimensions of Landscape (3 Cr.)

(GEN. ED. #9 and #11) (LER–ENV)

This course explores the cultural dimensions of environmental sustainability, the complex relationship between humans and nature, and the historical roots of our ecological crisis through the lens of landscapes and gardenscapes in the visual arts over time and across

cultures. Through landscape painting, gardens, and earthworks, we will address the 'legibility' and cultural construction of landscape imagery by exploring how artists have shaped, processed, and transformed nature, how humans have projected their identity, values, politics, and myths onto the land, and how visual constructions of landscapes shaped discussions and debates about the past, the present, and the future of the environment. Prerequisite: ART 103 , sophomore standing, or permission of instructor. Fall semester. Offered 2012-13 and alternate years. Oettinger.

BIO 170 - Environmental Alternatives (3.5 Cr.)

(GEN. ED. #6 and #11) (LER–NS AND ENV)

Critical evaluation of pressing environmental issues such as population growth, acid rain, biodiversity, global warming, ozone depletion, and toxic wastes. Special emphasis on how these problems affect the Chesapeake Bay. Examination of conflicting views about the seriousness of these threats and examination of alternative solutions within the context of economic, cultural, and political factors. Four hours lecture/laboratory. Laboratory includes several field trips. This course fulfills the college laboratory science requirement. Prerequisites: none. High school biology or chemistry strongly recommended. Fall semester. Repeated spring semester. Kicklighter, Kjellerup.

BIO 240 - Ecology and Evolution (3 Cr.)

(GEN. ED. #6 with BIO 241, and #11) (LER–ENV)

The distinctive features of diverse terrestrial and aquatic habitats are examined to discover how they affect individual, population, and community processes. Ecological and evolutionary theory is used to explore the relationships between structure and function in ecosystems, and current models are used to probe the nature of population growth and its regulation. Special emphasis will be placed on environmental sustainability and how climate changes and other human induced activities may impact the ecology of organisms. The mechanisms of evolution are illustrated using examples from population genetics, speciation, and co-evolution. Three hours lecture. Prerequisites: BIO 220 . Fall semester. Kicklighter.

BIO 243 - Field Methods in Tropical Ecology (4 Cr.)

(GEN. ED. #6 and #11)

Targeting natural/biological science majors, this course will explore topics of tropical ecology (biodiversity, cloud forest ecosystems, and others) in greater depth, with

emphasis placed on learning research methodologies that can be used in field-based or laboratory research. Prerequisite: One course in biology or ecology with a lab or field component.

BIO 244 - Environmental Sustainability (4 Cr.)

(GEN. ED. #11) (LER–ENV)

Students examine and analyze concepts of sustainability and their global and local interpretations and meanings as framed by global-local issues: climate change, ecotourism and economic development, environmentalism, human health, conservation, and biodiversity. Emphasis is placed on contextualized examples of environmental, economic, social, political, and cultural tensions related to sustainability. Includes field trips, exercises, and guest lectures by local scientists and activists. This course will not count toward the major. Credit will be awarded only one time—for Goucher's BIO 170 or this course (BIO 244).

BIO 343 - Chemical Ecology (3 Cr.)

(GEN. ED. #6 and #11 with BIO 343L)

An introduction to how organisms use chemicals to gather information about and interact with their environment. Topics include how chemicals mediate interactions between individuals and their environment (finding nesting sites or suitable habitat), between different species (finding food/hosts, defending against predators), and between members of the same species (finding a mate). Three hour lecture. Prerequisite: BIO 240 . Spring semester. Offered 2013-14 and alternate years. Kicklighter.

BIO 384 - Seminar in Marine Ecology (3 Cr.)

(GEN. ED. #7)

Examination of the structure and function of diverse marine ecosystems, including the Chesapeake Bay, coral reefs, deep ocean, and polar seas. Emphasis on current research and theory through critical examination of primary literature. Oral presentations. Prerequisite: BIO 240 . Spring semester. Offered 2014-15 and alternate years. Kicklighter

BUS 141 - Introduction to Environmental Management (3 Cr.)

(GEN. ED. #11) (LER–ENV)

This course will examine the objectives and best sustainability practices of leading nonprofit and for-profit companies. In addition, the course will look at "green" initiatives

at Goucher College and at business throughout the world. Environmental topics discussed will include renewable energy sources, recycling, ecotourism, sustainable fishing, toxic site remediation, urban planning, and hotel and construction green practices. Students will learn from participating in group projects, activities on campus, and listening to green practitioners visiting class. Fall semester. Hubbard.

CHE 105 - The Environment and its Chemistry: Laboratory (1 Cr.)

(GEN. ED. #6 with CHE 106) (LER-NS WITH CHE 106)

Laboratory experiments that illustrate topics covered in CHE 106 . Not open to students who have completed CHE 112 . Prerequisite or co-requisite: CHE 106 . Three hours lab Spring semester. Offered 2014-15 and alternate years. Amann.

CHE 106 - The Environment and its Chemistry (3 Cr.)

(GEN. ED. #11; GEN. ED. #6 with CHE 105) (LER-ENV; AND NS WITH CHE 105)

Introduction to chemistry with special emphasis on environmental issues important to our communities, such as water and air quality, natural resource availability and energy production from renewable resources, fossil fuels, and nuclear plants. Environmental topics such as green chemistry and remediation techniques will be studied. Three hours lecture. Not open to students who have completed CHE 111 . Spring semester. Amann.

CHE 270 - Environmental and Green Chemistry (3 Cr.)

(GEN. ED. #11) (LER–ENV)

Exploration of the chemistry of the environment including the atmosphere, soil, water, and energy sources. Emphasis will be placed on perturbations of natural processes as a result of human activity and on the principles of green chemistry, through which chemists could reduce their footprint on the environment. Three hour lecture. Pre- or co-requisite CHE 230 . Fall Semester. Offered 2014-15 and alternate years. Schultz.

EC 225 - Environmental Economics (3 Cr.)

(GEN. ED. #11) (LER–ENV)

A survey of techniques and topics in environmental economics, beginning with the theory of market failure and externalities. Examples will be drawn from the U.S. and global experience dealing with problems such as air pollution, water pollution, and solid wastes, etc. Particular emphasis will be placed on cost-benefit analysis, contingent valuation studies, statistical valuation of life, and the implementation of policies that achieve environmental goals and economic efficiency. Prerequisite EC 101 , and MA 160 or placement into MA 170 (or above). Fall semester. Shamshak.

ENG 112 - Environmental Science Fiction (3 Cr.)

(GEN. ED. #11) (LER-ENV)

An introduction to college-level analysis of major works of literature. We will be reading (and viewing) Science Fiction with plots and characters that will help us imagine the consequences of our action or our inaction for environmental sustainability, and perhaps give us the courage to unflinchingly examine our situation and save our environment. Fall. Myers.

ES 100. Introduction to Environmental Sciences (3.5 Cr.)

(GEN. ED. #6 and #11) (LER–ENV)

This course explores current environmental issues with the goal of evaluating how the integration of biological, chemical, geological, and physical principles is vital for identifying and understanding environmental problems and for shaping policies for effective solutions. The laboratory centers on the application of scientific principles and protocols to investigate both natural and urban environments. Discussions will focus on global environmental issues, including global warming, water and air quality, urbanization, biodiversity, human population growth, and food production. This course involves required field trips. Four hours lecture/laboratory. Fall and spring semesters. Mora.

ES 130E. Intermediate Reading in Spanish and Environmental Studies in Ecuador (6 Cr.)

(GEN. ED. #2, #3, and #11) (LER–ENV, LER-SA, LER-FL)

This interdisciplinary course allows students to study environmental sustainability issues and Spanish in Ecuador, which is one of the most biodiverse countries in the world. This

course encompasses a pre- program course and an international field experience that includes field trips to the rain-forest and the San Cristobal Island in the Galapagos Islands. Using current environmental problems in Ecuador and elsewhere, this course focuses on environmental politics, economic development, and/or ethical considerations about the relationship between human populations and their surrounding ecosystems. This course also examines the intellectual history of the idea and discipline of ecology, including Darwin's legacy and the importance of the Galapagos Islands in shaping Darwin's thought. Credits will be distributed as follows: 3 credits during the pre-program course in the Spring semester at Goucher (2 Environmental Studies and 1 Spanish), and 4 credits during the three week intensive course in Ecuador (1 Environmental Studies and 3 Spanish). This course will be offered every other year in the Spring semester at Goucher, in combination with a three week intensive course in Ecuador during May/early June. Offered May/June 2012 and every other year. Department.

ES 130G. Intermediate Reading in Spanish: Environmental Studies (6 Cr.)

(GEN. ED. #2, #3, and #11) (LER-ENV, LER-SA, LER-FL)

This interdisciplinary course allows students to study environmental sustainability issues and Spanish in Ecuador, which is one of the most bio-diverse countries in the world. This course encompasses a pre-program course and an international field experience that includes living on San Cristóbal Island, visiting several other islands in the Galapagos, and visiting Otavalo (an indigenous community) in Ecuador. This course will examine the tensions that exist in the Galapagos between preserving one of the world's most pristine ecosystems and sustaining the people who live and depend on the islands' resources. We will also consider the role of the indigenous cultures in helping the government of Ecuador advance progressive sustainability initiatives in the face of demands to extract the non-renewable resources that exist in this bio-diverse country. 3 credits during the pre-program course in the Spring semester at Goucher (2 Spanish and 1 Environmental Studies), and 3 credits during the three week intensive course in Ecuador (2 Environmental Studies and 1 Spanish). Prerequisite: SP 130. Students will receive credit for SP 229 or for independent work in Spanish (1-3 credits, the equivalent to SP 299). Spring/summer. Offered 2014 and alternate years. Cortes-Conde and Kasniunas.

ES 140. Introduction to Environmental Studies (3 Cr.)

(GEN. ED. #11) (LER–ENV)

An introductory course intended to broaden and deepen understanding of the environmental issues facing humanity today. The course focuses on how human institutions and ways of living create—as well as offer resources for solving—the problems that we face. We examine a selection of topics that have become central environmental issues of our time: climate change, biodiversity loss and conservation, food production, energy and sustainable development. We then consider how contemporary social activists and thinkers are defining central problems and questions. Finally we investigate our role in creating humanity's collective social-environmental future. Fall and spring semesters. Billo.

ES 200. Environmental Geology (3 Cr.)

(GEN. ED. #11) (LER–ENV)

This course examines the interconnectivity of geologic processes, climate change, and life on Earth. Topics include rock formation, soils, earthquakes, volcanoes, landslides, floods, and river and groundwater pollution. Emphasis will be placed on the application of geologic principles to solve some environmental problems. Variable semesters. Mora.

ES 204. Environmental Engineering (3 Cr.)

(GEN. ED. #11) (LER – ENV)

Critical examination of current problems related to environmental engineering approaches applied to protect resources, human health, and the environmental quality. Topics include: Environmental Health Microbiology (drinking water, sewer processes and wastewater), Xenobiotics (Man-made toxic compounds), Sustainable Waste Technology and Life Cycle Assessment (evaluation of products from "Cradle-to-Grave"). Emphasis is on the environmental impacts of the Greater Baltimore area and the Chesapeake Bay including water sheds and on the protection of resources. Lectures, student presentations & discussion, guest lectures and field trips to facilities such treatment plants for drinking water and wastewater. Prerequisites: BIO 104 or ES 100 or CHE 106/CHE 111. Spring Semester. Offered 2014 and alternate years, Kjellerup.

ES 205. Debunked! Environmental Writing & Communication (3 Cr.)

This 200-level environmental communication and writing class will focus on improving scientific literacy across a variety of media. We will prepare students to be intelligent consumers of popular environmental discourse, able to distinguish valid science-based information from disinformation. As well, the course will stress competent science-based environmental writing. Students will be expected to understand science-based articles in newspapers, magazines, and journals; and scientifically- themed television programming. Assignments will include a letter to the editor, a storyboard for a television episode, a corporate press release, an NGO white paper, and an in-depth research article. The course will focus on environmental and sustainability-based subjects. Prerequisite: College Writing Proficiency requirement. Fall semester. Offered 2014 and alternate years. Peroutka.

ES 210. Biosphere and Society (3 Cr.)

This course employs interdisciplinary inquiry and mixed methodological approaches towards understanding current environmental issues. Built around critical evaluation and analysis of current scientific reports and other primary materials, the course focuses on topical issues at the intersection of ecological questions and social institutions. Emphasis is placed on cultivating the ability to understand disciplinary abstraction and apply such knowledge to context-dependent explanations of environmental challenges. The course is intended to support development of key intellectual and practical tools for upper division work and future careers in environmental studies. Satisfies requirement for writing proficiency in the major. Enrollment restricted to Environmental Studies majors and minors. Prerequisite: ES 100 and ES 140/PSC 140. Fall semester. Department.

ES 215. Fossil Fuels and Society (3 Cr.)

In this course students will approach societal relationships to fossil fuels from a contemporary perspective. We will cover multiple conceptual themes, including envrionmental justice and corporate social responsibility. The course concentrates on consumption patterns in shaping specific social and political relationships. By studying the social and political aspects of fossil fuel consumption, students should be able to apply this knowledge to current events and politics, and begin to develop practical real-

world solutions for our current energy challenges. Prerequisite: ES 140. Offered 2014 and alternate years. Billo.

ES 220. Directed Readings in Environmental Studies (1-3 Cr.)

Directed reading permits a student to learn a topic or area within the field of environmental studies at a deeper level. Under the direction of a faculty member, readings tailored to a topic or area are selected, and a formal written report is submitted by the student at the end of the semester. Prerequisite: Junior or senior standing as an environmental studies major and permission of instructor. Fall and spring semesters.Department.

ES 225. Qualitative Environmental Research (3.0 Cr.)

The research process encompasses a wide continuum, from the articulation of a research theme or question to the determination of how to collect data to considerations about what to "count" as evidence. This class focuses on the process of knowledge production within human-environment interactions through an in-depth engagement with qualitative research methods. We will examine the epistemological, methodological, and political implications of specific methods as well as learn and practice the techniques for conducting qualitative social-science research. Prerequisite: ES 140 or PSC 140 or sophomore standing. First offered 2014. Billo.

ES 230. Political Ecology: Culture, Politics, and Environmental Change (3 Cr.)

This course examines various interpretations of political ecology, outlining the crucial theoretical and methodological problems in the field. Emphasis will be placed on the interpretation that views political ecology as an analytical tool that seeks both to unravel the political and cultural forces at work in environmental change and to provide for a more comprehensive understanding of how global and local environmental issues relate to each other. Prerequisite: ES 140/PSC 140, ANT 107, or permission of instructor. Variable semesters. Department.

ES 238. Ecology (3 Cr.)

(GEN. ED. #11) (LER–ENV)

An introduction to the diverse terrestrial, marine, and aquatic habitats of the Earth and how the organisms found these habitats interact with their biotic and abiotic environment. Individual, population, community, and ecosystem levels of ecology will be discussed, with an emphasis on environmental sustainability and how climate change and other human induced activities may impact the ecology of organisms. Lecture, discussion, and some fieldwork. Course not open to students enrolled in BIO 240 or biological science majors or minors. Prerequisite: BIO 104. Spring semester. Offered 2013 and alternate years. Kicklighter.

ES 245. Psychology of Environmental Problems (3 Cr.)

(GEN. ED. #11) (LER ENV)

This course outlines current environmental problems and their historical bases. The course then explores how different psychological perspectives view the relationship between individuals and the environment, as well as reviews psychological research related to environmental sustainability. Guidance for improving environmental sustainability based on the different psychological perspectives are examined. A major goal of this course is for students to develop an understanding of how psychology can contribute to promoting sustainability of the environment. Prerequisite: ES 140, PSC 140, or PSY 111. Fall semester. Mills.

ES 275. Transnational Security & Sustainability (3 Cr.)

(GEN. ED. #11)

The course will examine non-traditional threats to the national security of the United States or any other nation. New threats arising from changing environmental and social conditions are no less dangerous than armies, and no less applicable to the field of international relations and environmental studies. This course will examine the effect that climate change, resource availability, demographics, and globalization are having on the foundation on which nations build their security. Prerequisite: PSC 111 or PSC 114 or ES/PSC 140 or permission from instructor. Spring. First offered 2012. Chalecki.

ES 290. Internship in Environmental Studies (3-4 Cr.)

Students hone their critical and problem-solving skills by addressing issues in environmental studies through positions in non-profit, academic, governmental, or industrial institutions. Prerequisite: ES 100 or ES 140 . Fall and Spring semesters. Department.

ES 310. The Role of Science in World Affairs (3 Cr.)

This class will examine the role that science and scientific discoveries play in world affairs. As science- driven discoveries and topics take a greater place of prominence among nations, students will need to be able to separate scientific truths from political expediency. We will discuss some of the earliest modern scientific discoveries and their international ramifications, and how international scientific cooperation has borne fruit for many nations. We will examine some of the most contentious modern- day scientific topics that bear on current world affairs such as GMO foods, climate change, space technology development, global disease, and weapons systems. We will also consider ethics in science, the intersection of science and politics on the world stage, and how science and technology can change the global balance of power. Prerequisites: ES 140 or PSC 114 , and junior standing, or permission of instructor. Every other Fall semester. First offered 2012. Chalecki.

ES 315. Climate Change (3 Cr.)

This course critically examines the science of climate change, the predicted effects of this change on the planet, and the proposed approaches to address it. This examination also involves an analysis of both domestic and international policy debates and an evaluation of the ecological, social, and economic costs and benefits of the leading solutions that have been proposed to mitigate or to adapt to climate change. Prerequisites: ES 100 or ES 200 , and junior standing, or permission of instructor. Fall semester. Offered 2013 and alternate years. Mora.

ES 325. Environmental Political Theory (3 Cr.)

This course begins with an examination of the origins of environmental thought through a reading of several, well-known nature writers, namely, Thoreau, Muir, and Leopold. It

then turns to a discussion of how aspects of the relatively new field of environmental political theory intersect with the tradition of political thought, reinterpreting and broadening the meanings of citizenship, justice, and other political concepts in light of the ascendancy of environmentalism. Prerequisite: ES 140/PSC 140 or permission of instructor. Variable semesters. Department.

ES 330. Urban Sustainability (3 Cr.)

With over half of the world's population living in cities and with an increasing trend toward urbanization to continue for the foreseeable future, it is imperative that we evaluate different approaches to make cities sustainable. This course examines the economic, social, and environmental dimensions of urban sustainability in an effort to examine resource consumption in cities and to assess critically the urban policies designed to reduce environmental damage and improve quality of life. Emphasis will be placed on the use of ecological principles on both the biophysical environment of a city and its societal dimensions to provide a novel context to the functioning and structure of cities and to create a useful framework upon which different policies can be evaluated. Prerequisites: Junior standing, ES 100, and ES 140. Fall semester. Offered 2013 and alternate years. Mora.

ES 335. Globalization & Environmental Sustainability (3 Cr.)

This course explores the international dimensions of envrionmental issues, including the effect of economic globalization on the environment and globalization of environmental conservation. The course is grounded in histories of globalization, particularly as a process of uneven development. We will explore the rise of "sustainable development", a term that links economic globalization and global conservation. By studying the ongoing linkages between globalization, environment, and inequality, students will better understand why mainstream environmentalism fails to achieve sustainability. Prerequisite: ES 140 and junior standing. Spring, every other year. First offered 2014. Billo.

ES 375. Advanced Topics in Environmental Studies (3-4 Cr.)

This course examines advanced topics in environmental studies through an in-depth evaluation of contemporary environmental concerns. Topic varies from year to year, and they may include political ecology, environmental justice, conservation, environmental

governance and policy, land-use transformation, sustainable development, or environmental activism. Course may be repeated for credit if a different topic is offered. Prerequisites: Junior standing and ES 140. Fall semester. Department.

ES 390. Environmental Studies Senior Capstone (3 Cr.)

This course for majors and minors integrates concepts covered in the Environmental Studies curriculum by providing students with opportunities to synthesize knowledge and to apply skills and methods learned throughout their study in the major. Emphasis will be placed on developing skills that are critical for students in their future careers, including communication, analytical, research, critical thinking, and problem solving. Students work on individual and group projects to further their understanding of a particular environmental problem, issue, or subject area. The central activities of the course are a semester long project designed to further integrative thinking and a series of exercises designed to hone students' preparedness for careers and/or further studies in the environmental field. Students will have the option to embed service-learning opportunities into their semester project. Prerequisite: Senior standing as an environmental studies major or minor. Spring semester. Department.

ES 399. Independent Research in Environmental Studies (1-3 Cr.)

(GEN. ED. #7)

Library research work and/or laboratory-based project carried out under the supervision of a faculty member affiliated with the Environmental Studies Program. Results of the research will be presented in the form of an annotated bibliography, an oral presentation/examination, a formal written report, a public presentation, or a combination of the above. The type of research presentation will be established in consultation with the faculty member supervising the research. Prerequisite: Junior or senior standing as an environmental studies major and permission of instructor. Fall and spring semester.Department.

FR 344 - French Environmental Studies (3 Cr.)

(GEN. ED. #11) (LER-ES)

This course is devoted to environmental issues important in France and Francophone countries but which clearly concern the whole world. Depending on the special topic, we will explore current ecological issues such as global warming, the opening of the Northwest Passage, genetically modified organisms, nuclear energy, the relationship

between human and non-human animals, alter-globalization, green party politics, etc., from a pluri-disciplinary perspective. These viewpoints may include politics, science, history, philosophy, demography, economics and geography, for example, expressed in media such as the press, the cinema, music, and literature. Prerequisites: FR 245 and FR 256 or FR 258 . Fall or Spring (variable). St. Ours.

MA 141 - Statistical Data Analysis with Environmental Issues in View (4 Cr.)

(GEN. ED. #5 and #11) (LER–MR AND ENV)

Basic concepts of descriptive statistics, simple probability distributions, and prediction of population parameters from samples are developed as a means to analyze environmental issues and the debates centered on them. Use of computer in analysis and interpretation of statistical data. Four hours lecture. Prerequisite: placement exam. Credit will not be given for those who have received credit for MA 140 , MA 168 , MA 241 , EC 206 , or PSY 200 . Fall semester, repeated spring semester. Webster.

MA 171 - Calculus I—Environmental (4 Cr.)

(GEN. ED. #5 and #11) (LER–MR AND ENV)

The concepts of limit and derivative are developed, along with their applications to environmental sustainability issues. A symbolic algebra system is used as both an investigative and computational tool. Three hours lecture, two hours laboratory. Prerequisite: placement exam or MA 160 with a minimum grade of C-. Prerequisite to MA 180 . Credit will not be given for those who have received credit for MA 170 . Fall or Spring semester. Webster.

PHL 205 - Environmental Ethics (3 Cr.)

(GEN. ED. #11) (LER-ENV)

A philosophical examination of the relationship between human beings and the natural world. Readings address cultural and scientific construction of nature and the environment, various constructions of human versus animal being, the metaphysical underpinnings of various “animal rights” and “conservation” positions, and the relationship between environmental and social concerns. Students will consider and evaluate competing approaches to environmental justice. Prerequisite: either sophomore standing, one course in philosophy, or permission of the instructor. Fall semester, Offered 2015-16 and alternate years. Grebowicz.

PHY 250 - Energy, Physics, and the Environment (3 Cr.)

(GEN. ED. #11) (LER - ENV)

Introductory course in environmental physics that emphasizes the physical principles behind the production, transport and conversion of energy. The laws of thermodynamics and classical mechanics are applied to natural ecosystems and energy resources such as fossil fuels, nuclear energy, hydropower, wind, solar power, etc. These resources are analyzed in terms of the societal and environmental impacts of the associated technologies. Prerequisite: PHY 115 or PHY 125 or permission of the instructor. Spring semester. Offered 2014-15 and alternate years. Dukan.

WS 242 - Women and Environmental Justice (3 Cr.)

(GEN. ED. #10 and #11) (LER-DIV and LER-ENV)

Environmental issues do not affect all of us equally. In the United States, poor and minority groups are disproportionately impacted by pollution, toxic dumping, mountaintop removal and other issues. For women, there are reproductive implications, as well as health issues. This course will examine both articles on environmental issues and imaginative writing (novels, poetry, etc.) depicting the environment's affect on working-class and poor people's lives. The course will address national and international concerns. Prerequisite: Sophomore standing or permission of the instructor. Fall semester and alternative years. Tokarczyk.

Graduate Courses

ENV 610: Cultural Geography and Land Management (3 credits)

This course introduces students to the importance of spatial dimensions and relations in social organization, incorporating social and cultural meanings of space and place and political and economic implications into land management practice and policy. The course surveys basic concepts in geography, including cultural-settlement patterns, land-use patterns, sense of place, populations and demographics, regionalization, agriculture and rural development, urbanization and industrialization, the political economy of natural resources, and the social production of space. The course explores these topics in the framework of land-use policy and management and illustrates the use of legal instruments such as conservation easements, political structures such as protected areas and bio reserves, economic incentives in ecotourism, and digital technologies such as geographic information systems (GIS).

ENV 615: The Environment & the Media (3 credits)

Offered in two sections-Environmental Communication and Critical Analysis-the common core of this course introduces students to the role of the media and communications in articulating environmental claims, issues, and challenges.

- **Section A**
  - Environmental communication will explore techniques for communicating across social and political differences, expressing complex technical issues, mediating contentious issues, and managing crisis rhetoric. Students will investigate effective and innovative strategies of communication through both traditional and new media formats and outlets.
- **Section B**
  - Critical analysis will be focused on understanding multiple points of view, developing scientific literacy, and identifying sources and forms of bias and misrepresentation. Students will evaluate popular environmental discourse and analyze environmental rhetoric.

ENV 624: Environmental Research (6 credits)

This research and methods course is offered in four 1.5 credit-hour sections: Science & Philosophy; Systems Thinking and Modeling; Research Methods; and Evaluating Claims-all of which are required, in any sequence. The course is designed to ground students in the qualitative and quantitative bases of research methodology, with the dual goal of training students to interpret, evaluate, communicate, and use scientific-research findings as well as design and conduct social science research projects.

- **Section A**
    - Science and Philosophy introduces students to the scientific method and philosophical traditions, including positivism, phenomenology, and pragmatism, and debates between realism, instrumentalism, and constructivism deeply informing our approaches, assumptions, and understanding of environmental issues, problems, and solutions.
- **Section B**
    - Systems Thinking and Modeling introduces students to the concept of systems thinking, design thinking, nonlinear dynamics, thresholds, uncertainty and surprise, and the importance and application of feedback loops in ecosystems, built-environment impacts, and human ecology. In this class, students will learn to develop models as useful technologies and tools in socioecological analysis.
- **Section C**
    - Research Methods instructs students in formulating research questions and designing methods to measure, sample, or model them. This section includes both quantitative and qualitative methods, such as surveys, ethnography, case study, and participatory-action research. In this class, students will develop a research proposal.
- **Section D**
    - Evaluating Claims presents case studies and critical analysis of research claims by examining the premises, logic, and application of method, as well as the validity and quality of the data. Students will develop quantitative literacy for understanding scientific models (mathematical, population dynamic, and dimensional) and their underlying principles and notational conventions as tools that organize data, define parameters, clarify processes, and enable

ENV 627: Environmental Social Science (3 credits)

This course is designed to introduce students to environmental social science approaches and concepts, including: the relationship between society, politics, and the environment; social processes and their iterative and reciprocal effects on the environment; factors that shape interactions between humans and the environment; the challenges and implications of decision making, policy, and governance; and social science research methods applied to environmental issues.

ENV 633: Environmental Sustainability & Resilience (3 credits)

Sustainability and resilience are the environmental watchwords of our time and key, integrative frameworks for environmental studies. Sustainability appeals to conservation, preservation, and mitigation efforts, while resilience prepares for change. This course is solutions oriented and designed for students to examine and critically assess alternative approaches to environmental challenges and social change. Topics in this course will include scales of sustainability, adaptation, and mitigation (e.g., climate change); consumption and production; quality-of-life indicators (Genuine Progress Indicators) as alternatives to gross domestic product (GDP); the precautionary principle; and developing solutions focused on survival, security, and equity.

ENV 634: Environment, Development, and Economics (3 credits)

This course examines how natural resources intersect with social and economic-development initiatives. We will review the different kinds of natural resources and review case studies of both successes and failures in regard to sustainable use and community benefits. Special attention will be paid to community-based initiatives and examples of inclusive decision making and policy design.

ENV 695: Environmental Studies Capstone (6 credits)

The capstone project will be the culminating project of the student graduate career in the program. He or she will complete either a traditional academic thesis with an applied focus or a project resulting in a product or event with supporting documentation and a reflective written exercise. Under the guidance of the academic director and a faculty adviser, each student will propose a project, conduct the research, and complete the project within the timeframe of one to two semesters. The nature of expected duties and

experiences as well as the work to be accomplished by the student will be determined according to program guidelines and the student's professional interests. Activities, preparation, and evaluation criteria will be determined prior to approval.