

The Global Environmental Studies Major



Guide to the Major
2009-2011

Table of Contents

Introduction to the Major	3
Completing a Learning Plan & Learning Synopsis.....	3
A Major in GES.....	4
What is a Breadth Course?	4
What is a Skills Course?.....	4
What is a Depth Course?.....	5
The Capstone of the Major.....	5
A Minor in GES	5
Honors	6
Opportunities for Undergraduates	7
Breadth Course Offerings.....	8
Skills Course Offerings	10
Depth Course Offerings	11
Capstone Course Offerings	13
Complete Course Listings with Descriptions.....	14
Student Learning Plan	28
GES Learning Synopsis Chart.....	29
Major Worksheet.....	30
Minor Worksheet.....	32
Honor Program Application	33
Study Abroad Internship Form.....	34
Summary of Requirements.....	35

(updated 11/12/09)



Global Environmental Studies **Introduction to the Major**

Global Environmental Studies focuses on the economic, cultural, and political forces that produce environmental transformation. You will learn what kinds of livelihoods lead toward sustainability and social justice; and what remedies there are for restoring degraded ecologies. You will also learn the geographies of difference and choice regarding development desires and nature-society relationships.

Through this major you will gain knowledge from a wide range of disciplines here at Clark University. Administered through Clark's world renowned School of Geography, you will have a chance to take classes from the following departments and programs:

Geography; Visual and Performing Arts; International Development, Community and Environment; Biology; Economics; Government; Management; Philosophy; Sociology and Women's Studies.

The Global Environmental Studies major requires 12 courses. These courses encourage a broad education in the environment, deepened through a focused examination of specific environmental problems with compatible analytic or aesthetic skills courses. In addition, GES courses involve students actively in hands-on problem-solving activities, promoting an internship/study abroad opportunity as part of the major itself. The guiding philosophy of the GES major, as administered by the Geography department, is to contribute to the overall goal of your Clark education: to lay the foundation for life-long learning and critical thinking. We describe these possibilities in detail below.

Completing a Learning Plan & Learning Synopsis

The first thing you should do once you have decided upon GES as your major is talk with the undergraduate advisor in GES Prof. Dianne Rocheleau at drocheleau@clarku.edu ; phone 509-793-7176 who will help you get started and will set you up with a GES advisor.

Each student is required to prepare a formal *learning plan* upon declaring the major. This plan, which can take the form of the major planning sheet in the program guide, identifies the courses the student intends to take (and in which semesters) in order to complete the major requirements. This plan can and should be regularly updated, with files retained by the major advisor and/or the undergraduate coordinator, as well as by the student. *The Learning Plan requires signatures by the student, the faculty advisor, and the Director or the Undergraduate Advisor, before Senior Clearance is granted.*

In addition by January 31 of their senior year, students must complete a *Learning Synopsis*. The synopsis will provide a comprehensive assessment of the GES major as experienced by the student. Specifically, the synopsis describes and points to evidence of student achievement according to the goals of the major: 1) understanding the diverse sources, and therefore, possible solutions to environmental problems; 2) articulating relationships of people, culture, and society with the biophysical environment; 3) defining and describing concepts of sustainability, economic and social justice in a global context 4) identifying specific problem/issue of global environmental significance and discussing comprehensive approach to solutions; and 5) mastery of appropriate skills. *The Learning Synopsis requires a signature from your GES advisor and an additional GES faculty member before Senior Clearance is granted.*

A Major in GES

The major has four components: (1) Breadth courses, (2) Depth courses (3) Skills courses, and (4) a Capstone seminar. GES majors are required to take a minimum of 12 interdepartmental courses in accordance with the following guidelines:

What is a Breadth Course?

Breadth courses emphasize the basic concepts of the Global Environmental Studies Major and ways of creating knowledge. Courses in the breadth area are designed to help you build frameworks for understanding the world.

We strongly encourage you to take your breadth courses early in your program, because these courses are often prerequisites for 200-level courses. Below are the six breadth areas of global environmental knowledge and the central questions addressed in each.

Majors are required to take **5 breadth courses** which are selected from the following broad disciplinary areas. Students are required to take **one** course from *State of the Earth* and **one** course from *Natural Science*. The remaining **three** courses can be chosen from the four remaining areas.

- ❑ ***The State of the Earth.*** How have natural disasters, used, shaped, and constructed nature? What are the impacts of various policies, economies, and cultures on the ecological systems covering the globe?
- ❑ ***Natural Science.*** Looks at the earth's physical features and the various effects of nature's processes on the landscape.
- ❑ ***Economics/Political Economy of the Environment.*** How does the global economy affect the environment? How do differences in consumption and management impact resources and environmental quality? How do different nations and cultures position themselves within the global economy?
- ❑ ***Government/Institutions.*** What action are the governments around the world taking to ensure the longevity of our environment? What role does the government (local, federal and international) play in shaping our ecosystems? How do cultural differences affect nature/society relationships?
- ❑ ***Civil Society and Social Movements.*** How do we create a sustainable future? How do NGO's factor into the preservation of the earth? What are the alternative visions shared by social movements?
- ❑ ***Culture and Environment.*** What landscapes are protected and why? How do we learn to appreciate and value nature? How do aesthetics of nature differ throughout the world?

Each year, several 000- and 100-level courses are designated as breadth courses in each of these areas. In special cases, a 200-level course may be used to fulfill a core course requirement, subject to the approval of the student's advisor and either the Undergraduate Advisor or the Director of the School of Geography.

What is a Skills Course?

Skills courses give you the opportunity to acquire and apply research, literacy, numeracy, and mapping skills for generating and interpreting knowledge. Our goal is for students to become critical thinkers and to have an understanding of how knowledge is created. Skills are particularly important to promoting valid analysis

of environmental problems and their solutions. They are of critical importance in gaining employment after graduation. Majors must take two skills courses and are encouraged to take more. GES 141 (Research Design) is strongly recommended for all GES majors unless the student obtains permission from their advisor. Exceptions may be granted on a case-by-case basis, especially for those students who take a humanities-based approach to the major. The second required course should be intellectually compatible with the “depth” area.

What is a Depth Course?

Depth courses give you an opportunity to explore a specific subject area more critically and stringently. Majors are required to take four depth courses, two of which must be at a 200-level. Depth courses are subject to approval by the student's advisor and must reflect a logical combination of courses as specified in the formal learning plan. Formal approval of the elective specialization course is implied by the advisor's signature on the learning plan.

In general, you should take your breadth and skills courses before taking your depth courses, which focus on giving you the chance to apply skills in research and problem solving. The GES major encourages students to do internships and study abroad; these efforts normally count as 200-level courses and would be considered part of the depth aspect of the major.

The Capstone of the Major

The capstone experience rounds off the undergraduate major by enabling students to see how their interests fit into the field of GES and into their chosen depth specialization. Students can achieve this via one of two modes: a primary research experience or a substantive exploration of a GES topic. This choice is made at the discretion of the instructor teaching the course.

In a *capstone organized as research experience* the student will identify and investigate a research problem; activities will include collecting and analyzing data as well as completing a research report and displaying a poster. As part of this process, the student should be able to articulate how his or her personal research activity fits into the present and historical trajectory of research in his or her specialization and in global environmental studies as a field.

In a *capstone focused on a substantive area* of the environment, the student should be able to place that area, with its set of cutting edge questions and problems, into the larger context of inquiry of the environment as a whole.

A Minor in GES

Students wishing to minor in GES must complete a total of eight courses. They are the following components of the regular program major:

Breadth Courses

Students seeking a GES minor are required to take **5 breadth courses** which are selected from the broad disciplinary areas – see above list. Students are required to take **one** course from *State of the Earth* and **one** course from *Natural Science*. The remaining **three** courses can be chosen from the four remaining areas: *Economics/ Political Economy of the Environment*; *Government/ Institutions*; *Civil Society and Social Movements*; *Culture and Environment*.

Skills Course

One skills course is required.

Depth Courses

Must take 2 depth courses, one being at the 200 level

Honors

The Honors Program in the Global Environmental Studies major gives the advanced student the opportunity to conduct a major independent research project on a topic of interest to him or her. To graduate with honors a student must successfully complete a two-semester independent honors project conducted under the supervision of a faculty advisor and one additional faculty member. Successful completion of the honors project will be recognized at Commencement. Most students will produce the honors thesis during their senior year although in some circumstances students may opt to enroll in the honors program for the spring semester of the junior year and fall semester of the senior year. GES Honors is open to juniors who, by the end of the first semester of the junior year, have a minimum grade point average of 3.25 overall and **3.5** in the GES major, and who can demonstrate the appropriate research background to undertake independent environmental research.

Because the honors thesis is a two-semester commitment, and often involves research during the summer before the senior year as well, it allows the student to explore a topic in considerable depth. The project should make an original contribution to GES knowledge. In crafting the research project and the honors thesis, the student will work closely with a faculty advisor and will also be able to draw upon the advice of an additional faculty member who will serve on the student's honors committee. In consultation with the faculty advisor and the committee member, the student will shape the research project and the thesis, including the length and format of the thesis itself. In addition to writing the thesis, the student will prepare a poster for presentation at Academic Spree Day and may have the opportunity to participate in a poster session at the national Association of American Geographers meetings, Human Ecology meetings, or other Environmental Studies meetings.

Here are some details about the process:

- ❑ Normally you will have taken Geography 141 (Research Methods) before enrolling in the Honors Program.
- ❑ You should expect to meet with your faculty advisor every two or three weeks during the semesters you are in the GES Honors Program, and you should consult with your faculty honors committee member once or twice a semester.
- ❑ Before you begin to write the thesis, consult with your advisor and committee member to draft an outline and to establish a timetable for submitting drafts of different parts of the thesis. The final draft of the entire thesis is due no later than **April 15**. Normally, however, your advisor and committee member will have seen and commented on previous drafts of the thesis before that time.
- ❑ Thesis format (e.g., references, headings) should follow guidelines for a School of Geography honors thesis.
- ❑ Your faculty advisor, in consultation with your committee member, will grade the thesis. On the basis of the thesis and your overall academic performance, they will also decide whether or not you will receive Honors at Commencement and the level of honors (honors, high honors, highest honors) to be awarded.
- ❑ A copy of the thesis should also be submitted to the Geography Office for permanent display in the publications case on the second floor of Jefferson Academic Center.

Applying for Honors

Applications can be found in this Guide or on the Geography Website or in the main Geography Office

- ❑ Notification of eligibility and information about the program is forwarded to all junior students before in November of the junior year.
- ❑ Students wishing to start their honors project in the spring semester of the junior year must notify the undergraduate program assistant by December 15. Those students wishing to start their honors project in the fall semester of their senior year must notify the undergraduate program assistant by March 15.
- ❑ Acceptance to the Honors Program is considered provisional until grades for the fall semester (junior year) are received. If these grades enable the student to continue meeting the GPA standards described above, she/he becomes formally accepted to the program.

- ❑ Honors students register for GES297 Directed Research (Honors), or HERO for two semesters - spring/fall of the junior-senior year or fall/spring of the senior year.

For further information about the Global Environmental Studies Honors Program, see your advisor or the Director of the department.

Transfer Students

To have transfer credits count toward the GES program here, consult with the undergraduate advisor as soon as possible.

Opportunities for Undergraduates

Internships

Students are strongly encouraged to do internships with local, state, federal and international governments, and social movement organizations for major credit. Please contact the faculty member you are working with or Career Services to inquire about possible opportunities. In most cases an internship can count as a depth specialization course toward the Major and can lead to job opportunities. Also Career Services can be reached at (508)793-7258 or careers@clarku.edu.

Study Abroad

The department encourages students to spend at least one semester studying abroad, an added reason to consult your advisor early in your GES program. Study abroad provides students the opportunity to witness first-hand the environmental issues that arise in other parts of the world and to be a part of their analysis and solution. To receive credit for study abroad, students must work with faculty advisers or other departmental and affiliate professors. For more information Study Abroad can be reached at (508) 793-7363 or studyabroad@clarku.edu.

The Clark Advantage

The Environmental Monitoring Station

CoFERT (Computer Facility for Environmental Research and Teaching) was established during 1997/98 as a joint venture between Clark's School of Geography, the Environmental School, and the George Perkins Marsh Institute. CoFERT is a high-end, computer based teaching and research facility for activities requiring large, digital databases and high-end analysis of human-environment relationships. CoFERT enables students to be actively engaged in analyzing and solving geographic and environmental problems in Central Massachusetts. Many geography courses are actively involved in the monitoring station. Some of the specific goals of the monitoring station are:

- ❑ to develop a set of indicators to evaluate environmental, economic, and social sustainability within Central Massachusetts;
- ❑ to analyze, evaluate, and interpret environmental, economic, and social data with regard to sustainability trends in the region on an annual basis; and
- ❑ to explore and explain critical relationships between environmental, social, and economic drivers of, and responses to, change in a local and regional context.

Undergraduate Teaching Lab

The Global Environmental Studies major offers many resources and opportunities for students. GES and geography majors registered in classes within each of their majors with lab components are eligible to use the geography computer laboratory located in the J. K. Wright Reading Room area (Geography Building, first floor). These students will be given access info by the faculty member.

Global Environmental Studies Breadth Course Offerings



1 course required in State of the Earth and 1 course required in the Natural Science category then choose 3 from remaining categories (5 courses in all)

Frequency: EOY=Every Other Year, EY=Every Year, ES=Every Semester, P=Periodically

Semester: FA09=Fall 2009, SP10=Spring 2010, Fall 2010=FA10, Spring 2011=SP11

State of the Earth (One course required)

EN171	International Perspectives on Environmental Problems and Policies	Downs	EOY	
GES179	Global Environmental Justice	Rocheleau	EOY	FA09
ID112	Leading Issues in Sustainable Development	Fernando	EY	

Natural Science (One course required)

BIOL084	Biodiversity	Foster/Hibbett	EY	FA09/FA10 FA11
BIOL103	Principles of Environmental and Conservation Biology	Filoramo/Baker	EY	FA09/FA10 FA11
BIOL114	Marine Biology	Robertson	EY	FA09/FA10 FA11
BIOL201	Ecology of Atlantic Shores	Livdahl/Robertson	EY	FA10
BIOL216	Ecology	Livdahl	EY	SP10/SP11
CHEM142	Environmental Chemistry	Greenway	EY	SP10
EN120	Discovering Environmental Science	Downs	EY	FA09
GES102	Weather and Climate	Williams	EY	SP10/SP11
GES103	The Natural Environment of New England	Kulakowski	P	
GES115	Introduction to Hydrology	Williams	EOY	FA09
GES119	Arctic Systems Science	Frey	EY	SP10/SP11
GES232	Landscape Ecology	Rogan	EY	SP10
GES263	The Climate System and Global Environmental Change	Frey	EY	FA09

Economics/Political Economy of the Environment

ECON 157	Economics of Natural Resources and Environment	Geoghegan	P	
GES126	Living in the Material World: Political Geography of Resource Development	Emel/Staff	EOY	SP10
GES127	Political Economy of Development	Peet	EY	FA10
GES224	Economy and Environment	Emel	EOY	FA10
ID125	Tales from the Far Side: Development and Underdevelopment	Asher	EY	FA09/FA10 FA11

Government/Institutions

EN171	International Perspectives on Environmental Problems and Policies	Downs	EOY	
EN276	Environmental Law	Staff	EY	
GOVT157	The Politics of U.S Environmental Issues	Cook	EOY	
GOVT216	Comparative Environmental Politics	Posner	EOY	FA11
ID294	Participation and Environmental Management	Staff	EY	

Civil Society and Social Movements

GES090/197	Native Americans, Land and Natural Resources	Emel	EY	FA09
GOVT251	U.S Social Movements and Interest Groups	Boatright	P	
ID131	Local Action/Global Change	Bell	EY	SP10
ID253	Social Movements, Globalization and the State	Fisher	EOY	FA10
ID294	Participation and Environmental Management	Staff	EY	
SOC265	Social Movements: Quest for Justice	Ross	P	

Culture and Environment

ARTS162	Exploring of the Natural World: Seeding Artistic Process with Drawing Monotype and Mixed Media	Claff	P	
ARTS 204	Sacred Space	Buie	EY	SP10/SP11
GES017	Culture, Place and Environment	Johnson	EY	FA09
GES136	Gender and Environment	Rocheleau	EY	SP10
GES237	Feminism, Nature and Culture	Emel	EOY	
ID269	Raced Nature, Gendered Developments: The Political Economy of Environmental Conservation	Asher	P	
PHIL131	Environmental Ethics	Derr	EY	SP10/SP11
PHIL232	Case Studies in Environmental Ethics	Derr	EOY	FA10

✦ Courses subject to change

Global Environmental Studies
Skills Course Offerings



2 Skills courses required, one related to Substantive Specialization

Frequency: EOY=Every Other Year, EY=Every Year, ES=Every Semester, P=Periodically

Semester: FA09=Fall 2009, SP10=Spring 2010, Fall 2010=FA10, Spring 2011=SP11

ARTS120	Introduction to Photography	DiRado/Armstrong/ Jalbert	ES	FA09/SP10 FA10/SP11
ARTS121	Intermediate Photography	DiRado	ES	FA09/SP10 FA10/SP11
ARTS200	Photography Projects	DiRado	P	
BIO106	Quantitative Methods in Biology	Livadahl	EY	SP10/SP11
ENG202	Feature Writing	Dempsey	EY	
GEOG216	Field Methods for Environmental Science	Kulakowski	EY	FA09/FA10
GES087	Introduction to Environmental Information Systems	Rogan	EY	SP10
GES110	Introduction to Quantitative Methods in Geography	Ratick/Pontius/ Staff	ES	FA09/SP10 FA10/SP11
GES141	Research Methods in Geography*	Martin/Polsky	EY	SP10
GES261	Decision Methods for Environmental Management and Policy	Ratick	ES	FA09/SP10 FA10/SP11
GES226	Who Fears What and Why: Social Theories of Environmental Risks and Hazards	Polsky	P	SP10
ID190	Introduction to GIS	Staff	ES	FA09/SP10 FA10/SP11
ID260	Quantitative Modeling	Pontius	EY	FA09/FA10
TA107	Introduction to Video Production	Simon	ES	FA09/SP10 FA10/SP11
TA119	Public Speaking	Hovenesian	EY	

*GES141 Research Methods in Geography is strongly recommended

✦ Courses subject to change

Global Environmental Studies
Depth Course Offerings



4 Depth Courses in a substantive area, two of which must be at the 200 level

Frequency: EOY=Every Other Year, EY=Every Year, ES=Every Semester, P=Periodically

Semester: FA09=Fall 2009, SP10=Spring 2010, Fall 2010=FA10, Spring 2011=SP11

The following are some suggested “substantive areas” or concentrations:

Sustainability Science

ECON128	Introduction to Economic Development	Ickowitz	EOY	SP11
EN101	Environment, Society and Technology	Stephens	EY	SP10/SP11
EN207	Climate Change, Energy and Development	Stephens	EY	FA09/FA10
EN277	Sustainable Consumption and Production	Brown		
GES226	Who Fears What and Why: Social Theories of Environmental Risks and Hazards	Polsky	P	SP10
ID112	Leading Issues and Sustainable Development	Fernando	EY	

Culture and Political Ecology

ECON245	The History of Global Economy	Brown	EOY	FA09
GES 017	Culture, Place and Environment	Johnson	EY	FA09
GES105	Keeping of Animals: Patterns of Use and Abuse	Johnson	EOY	FA09
GES136	Gender and Environment	Rocheleau	EY	SP10
GES179	Global Environmental Justice	Rocheleau	EOY	FA09
SOC205	Sociology of the Environment	London	EY	FA09

Urban-Industrial Ecology and Urban Environmental Problems

GES280	Urban Ecology: Cities as Ecosystems	Rocheleau	EY	FA09
MGMT252	Corporate Environmental Management	Staff	P	
MGMT264	Sustainable Urban Economic Development	Staff	P	

Environmental Risks and Hazards

EN282	Management of Environmental Pollutants	Brown	EY	FA09/FA10
GES226	Who Fears What and Why: Social Theories of Environmental Risks and Hazards	Polsky	P	SP10
GES247	Intermediate Quantitative Methods in Geography	Ratick	EY	FA09/FA10
GES261	Decision Methods for Environmental Management and Policy	Ratick	ES	FA09/SP10 FA10/SP11

Resource Management

ECON257	Environmental and Natural Resource Economics	Geoghegan	P	
GES105	Keeping of Animals: Patterns of Use and Abuse	Johnson	EOY	FA09
GES115	Introduction to Hydrology	Williams	EOY	FA09
GES126	Living in the Material World: The Political Geography of Resource Development	Emel	EOY	SP10
GES271	Groundwater Hydrology	Emel	P	SP10

Land-Change and Land-Degradation Science

GEOG086	Losing Ground (FYS)	Rogan	P	FA09
GEOG283	Land-Atmosphere Interactions	Williams	EY	FA09
GES232	Landscape Ecology	Rogan	EY	SP11
GES234	Geography of Fire	Rogan	EY	SP10
ID296	Advanced Vector GIS	Ogneva-Himmelberger	ES	FA09/SP10 FA10/SP11
IDND299	HERO	Polsky/Pontius/Rogan	ES	FA09/SP10 FA10/SP11

Art and the Environment

ARTS162	Exploring of the Natural World: Seeding Artistic Process with Drawing Monotype and Mixed Media	Claff	P	
ARTS 204	Sacred Space	Buie	EY	SP10/SP11
GES017	Culture, Place and Environment	Johnson	EY	FA09
GES237	Feminism, Nature and Culture	Emel	EOY	
PHIL131	Environmental Ethics	Derr	EY	SP10/SP11

Energy and the Environment

EN103	Sustainable University	Stephens	EY	FA09/FA10 FA11
EN207	Climate Change, Energy and Development	Stephens	EY	FA09
EN124	Global Warming: How to Respond?	Stephens	EY	FA09
GES126	Living in the Material World: The Political Geography of Resource Development	Emel	EOY	SP10

✦ Courses subject to change

Global Environmental Studies
Capstone Course Offerings



1 Capstone Course required

Frequency: EOY=Every Other Year, EY=Every Year, ES=Every Semester, P=Periodically
Semester: FA09=Fall 2009, SP10=Spring 2010, Fall 2010=FA10, Spring 2011=SP11

GES224	Economy and Environment	Emel	EOY	
GES226	Who Fears What and Why: Social Theories of Environmental Risks and Hazards	Polsky	P	SP10
GES280	Urban Ecology: Cities as Ecosystems	Rocheleau	EY	FA09
SOC276	Environment and Inequality	London	P	
IDND299	HERO	Polsky/Rogan/ Pontius	ES	FA09/SP10 FA10/SP11

Other 200 or 300 level courses by permission of Program Coordinator

✦ Courses subject to change

Global Environmental Studies
Complete Course Listings with Descriptions

Course Number and Title **Perspective**

(Cross listing)

ARTS120 Introduction to Photography

Studio, Lecture, Discussion. Introduction to black-and-white photography emphasizing the zone system and including camera operation, developing, printing and finishing techniques. Students must have a variable-setting 35 mm camera with a built-in or hand-held exposure meter and must provide their own film and paper. Open to nonmajors. Mr. DiRado and Mr. Armstrong/Offered every semester

ARTS121 Intermediate Photography

(COMM123)

Studio, Lecture, Discussion. Continues the refinement of photographic seeing through darkroom techniques, digital imaging and alternative processes. We will consider a broad spectrum of aesthetic, formal and conceptual issues in the field of fine-art photography, while students will be encouraged to develop a personal vision. Some reading and writing required, as is a field trip. Students will meet weekly for critiques and lectures, concluding the semester with a comprehensive portfolio. Open to nonmajors. Prerequisite: ARTS120 or acceptable portfolio with instructor permission. Mr. DiRado, Staff/Offered every year

ARTS162 Exploring the Natural World: Seeding Artistic Process with Drawing, Monotype and Mixed Media

This class explores the natural world as visual model and studies organic process as a metaphor for artistic process. With close observation of Nature's forms and structures, students sharpen their eyes and experiment with different field-drawing techniques. Numerous drawing expeditions produce a collection of images to use as seeds for finished drawings and prints. Students are encouraged to experiment with a variety of materials and create an individual final project in one or more of the media covered. Prerequisite: one of the following--ARTS100, 102, 128, 129 or instructor permission. Ms. Claff/Offered every year

ARTS200 Photography Projects

Studio, Lecture, Discussion. Continues the study of the techniques and aesthetics of black-and-white photography. Students have the opportunity to pursue individual photographic projects in the size and format of their choice. Open to nonmajors. Prerequisite: ARTS120 and/or 121. Mr. DiRado, Staff/Offered periodically

ARTS204 Sacred Space

(WS204)

Lecture, Discussion, Projects. Explores traditional and contemporary experiences of the sacred in spatial terms--through study of spatial and natural archetypes (i.e., mandala, threshold, cave, mountain); geometric harmonies in nature, art and architecture; sacred and secular architectural forms (temple, stupa, shrine, indigenous village architecture); geomancy or the relationship between built and natural environments; and ancient and contemporary expressions of the natural world as Gaia, manitou or sacred geography. Ms. Buie/Offered every year

BIOL084 Biodiversity

SP

Lecture, Laboratory. Students will explore the diversity of life on earth and the mechanisms by which this diversity is thought to have been generated. The implications of loss of biodiversity will be considered, as well as the causes of biodiversity decline. Conservation issues will be addressed. Fulfills the Science Perspective. Not for biology majors. Staff/Offered alternate years

BIOL103 Principles of Environmental and Conservation Biology

This course provides an introduction to biology appropriate for those interested in environmental and conservation biology. It is designed with three general goals in mind: (1) to provide students with an understanding of the unifying themes in modern biology, (2) to introduce students to the diversity of life forms at all levels of organization, and (3) to illustrate the methods and modes of scientific inquiry in the biological sciences. Students are introduced to principles of evolution, genetics, behavior and ecology. Satisfies BIOL 101 requirement for the biology major and is one of three core requirements for the environmental science major. Fulfills the Science Perspective. Must register for lab for BIOL 101. Ms. Foster and Mr. Thackeray/ Offered every year.

BIOL106 Quantitative Methods in Biology

Lecture, Laboratory. An introduction to mathematical and statistical methods that are most useful to biologists, this course provides skills that are useful in organizing and summarizing data, graphic methods of data presentation, and testing hypotheses based on experimental results. Key mathematical methods for describing biological phenomena are included, along with basic techniques for identifying differences among groups and relationships among variables. This course may be used by biology majors to fulfill part of their mathematics requirement. Alternatively, it may be counted among the required 10 biology courses for the major. Prerequisites: BIOL 101 or BIOL 103, and BIOL 102, and one semester of calculus (MATH 120 or MATH 124). Mr. Livdahl/Offered every year.

Course website

<http://clarku.edu/faculty/tlivdahl/quant/quantmeth.html>

BIOL114 Marine Biology

Lecture, Field Trips. Introduces the diversity and ecology of life in the oceans. Studies of basic physical oceanography and marine ecology precede studies of marine ecosystems such as salt marshes, kelp forests, rocky shores plankton and deep seas. Also included are the relationships of marine biology to the welfare of mankind. Prerequisites: BIOL 100, 101 or 103, and BIOL 102, or permission. Ms. Robertson/Offered every year

Course website

http://clarku.edu/faculty/robertson/Marine%20Biology%202001/index_biol14_2001.html

**BIOL201 Ecology of Atlantic Shores
(BIOL301)**

Lecture, Field Trip. This course explores the ecology of marine organisms found in diverse Atlantic habitats, ranging from the rocky intertidal of New England to the coral reefs of Bermuda. The course includes lectures, field research, and a one-week trip to the Bermuda Biological Station for Research during semester break. Students must pay a fee (approximately \$1400) for the cost of lodging, meals and airfare to Bermuda. Prerequisites: BIOL 101 or BIOL 103, and BIOL 102. Recommended: BIOL 114 or BIOL 216. Mr. Livdahl and Ms. Roberston/Offered every other fall.

Course website

www.clarku.edu/departments/biology/biol201/

**BIOL216 Ecology
(BIOL316)**

Lecture, Laboratory. Provides an overview of ecology as a scientific discipline. The primary emphasis is on efforts to explain and predict the distribution and abundance of organisms, how ecological communities are composed and why they vary in time and space. Prerequisites: one or more courses from the organismal biology group and one college-level math course. Mr. Livdahl/Offered every year

Course website

<http://clarku.edu/faculty/tlivdahl/Ecology/index.html>

CHEM142 Environmental Chemistry

Lecture, Laboratory. Focuses on chemistry related to environmental problems, with emphasis on aquatic chemistry and aquatic and air pollution. Equilibrium theory is developed as a model for aquatic chemistry and chemical analyses of local aquatic systems are conducted in the laboratory according to EPA procedures. Prerequisite: CHEM102, CHEM103, or advanced placement. In-class and final exams, laboratory reports. Mr. Greenaway/Offered every year

ECON128 Intro to Economic Development

Lecture, Discussion. This course is an introduction to development economics. Students examine the major theories of economic development, the major problems confronting less developed countries, and the policies and strategies appropriate for economic development. Some of the topics discussed include: Poverty and inequality, education and health, the relationship between population and development, international trade, and sustainable development. Offered in alternate years with ECON228. Students may not take both ECON128 and ECON228. Prerequisite: ECON010 or ECON100. Ms. Ickowitz/Offered every other year

**ECON157 The Economics of Natural Resources and the Environment
(LAS157/ ID155)**

Lecture. A review of political economic problems associated with such natural resources as land, water and energy goods, as well as a resource common to all of us, our natural environment. Topics include the assessment of

environmental impacts within market-oriented economics and the use of economics in policy designed to address environmental issues such as air pollution, global warming, biodiversity and suburban sprawl. Students may not take both ECON157 and ECON257. Prerequisite: ECON010 or 100. Ms. Geoghegan/Offered periodically

ECON245 The History of Global Economy

HP

Lecture, Discussion. Provides students with a comprehensive introduction to the history of the global economy. Using straightforward tools of economic analysis, we study the debate over the origins of the global economy, the growth of it before World War I, its destruction during the Great Depression, and its re-emergence during the past 50 years. The course focuses on the potential impacts of globalization on economic growth, the distribution of benefits (and costs) and the role played by colonialism and imperialism. Fulfills the Historical Perspective. Prerequisites: ECON011. ECON108 or ECON208 recommended. Mr. Brown/Offered every other year

**ECON257 Environmental and Natural Resource Economics
(EN257)**

Examines some of the issues associated with the economics of natural resources and the environment. Topics discussed, at both the theoretical and empirical level, are chosen from the following: the theory and analysis of renewable and nonrenewable resources, resource scarcity and the economy, sustainable development and the measurement of the benefits and costs of environmental regulation. Proper policies are discussed to encourage resource conservation, the problems of common property resources and the use of economic incentives to internalize environmental externalities. Students may not take both ECON157 and ECON257. Prerequisite: ECON011 (LAS 256) Ms. Geoghegan/Offered periodically

EN101 Sustainability Science: Environment, Society and Technology

SP

Sustainability science, an emerging field focused on the dynamic interactions between nature and society, is defined by the urgent problems it addresses rather than the disciplines it employs. Urgency for the societal need to promote a sustainability transition is increasing as risks associated with climate change, biodiversity loss, deforestation, and other types of environmental degradation are increasingly threatening human well-being and disrupting the earth's systems. Despite this urgency, the complexity and varying scales of the interconnected human-environment systems are preventing society from implementing social change to effectively confront these problems and transition toward sustainability. This transdisciplinary science course examines this complexity by focusing on scientific and societal linkages among environmental science, technological development, and attempts to reduce environmental impacts. Among the interconnected problems to be examined are: (1) climate change, energy, and atmospheric carbon dioxide concentrations, (2) agriculture, food production, land-use decisions, and human alteration of the nitrogen cycle, (3) ozone depletion, international environmental policy, and the phase out of chlorofluorocarbons, and (4) growing disruptions in the hydrologic cycle resulting in increasingly daunting challenges of water resource management. This course includes a required weekly laboratory and fulfills the natural science perspective requirement. Ms. Stephens/Offered every year, spring semester

EN103 The Sustainable University

Urgency for the societal need to promote a sustainability transition is increasing as risks associated with climate change, biodiversity loss, deforestation, and other types of environmental degradation are increasingly threatening human well-being in complex ways. This course explores both the theory and practice of sustainability and sustainable development by examining the role of the university in promoting a sustainability transition. The role of universities in society involves more than providing formal course instruction for enrolled students; universities are also critical places of discovery and innovation, centers for political discourse, and catalysts for political action. This course focuses on sustainability at the university because institutions of higher education have unique potential to catalyze and/or accelerate a sustainability transition. In addition, the focus on the university provides a lens for examining how institutions with complex structures make a myriad of decisions with environmental consequences, a context for considering the broad role of education in sustainable development, and a framework and perspective with direct and personal connections for students to consider the challenges of promoting sustainability. In addition to reading and writing about the challenges of sustainability and the role of the university in promoting sustainable practices in society, students engage directly with the challenges associated with promoting sustainable behavior and fostering institutional and social change through group projects right here on the Clark campus. Ms. Stephens/Offered every year, fall semester

**EN120 Discovering Environmental Science
(GES120)**

Lecture, Discussion. Covers key scientific and technical topics and emphasizes quantitative skills of problem solving. Topic areas include: mass and energy transfer; environmental chemistry: mathematics of growth; risk assessment; water pollution; and air pollution. The course aims to provide a solid foundation in important scientific aspects of environmental problems, complementing policy-oriented courses. Above all the course is designed to make students literate and comfortable with the language used to describe and analyze physicochemical processes. Study journals and homework problems are used to encourage literacy. Math skills emphasized. Mr. Downs/Offered every year

EN124 Global Warming: How to Respond?

First-Year Seminar. As global temperatures are increasing, sea level is rising, polar ice sheets are melting, and more intense storms are occurring, the mounting scientific evidence linking these changes to human activity has resulted in a shift in the global warming debate; rather than debating whether or not human activity is driving climate change current debate revolves around how society should respond. In this first-year seminar students will explore this debate by delving into the potential and the obstacles of various different societal actions that could be taken to reduce the risks and impacts of global warming, and explore how different countries and communities are responding. Shifting energy infrastructure toward renewable energy, designing transportation systems and community plans to reduce automobile reliance and associated emissions, and maximizing energy efficiency in buildings and industry are among the societal actions that will be investigated. An additional category of responses involves preparing for adaptation to inevitable or already occurring changes in climate. Students will learn about the many, complex technological, institutional, political, educational, and societal challenges associated with building the capacity for implementing the level of global change required to have an impact on minimizing the risks associated with our changing climate. Semester-long student projects will involve developing a proposal for implementing specific climate change response strategies at a specific scale, either local, regional, national, or international, emphasizing the connections between local action and global change. Ms. Stephens/Offered every other year, fall semester

EN171 International Perspectives on Environmental Problems and Policies

Lecture, Discussion. Highlights the scope of major global issues (e.g. climate change and biodiversity conservation), their social and political contexts, and what influences our population, development and environmental-policy choices. Two central themes are used: 1) conflicts of interest over assets, amenity, and distribution of costs and benefits, and 2) sustainable development ideas, conflicts and operational processes. The practicalities of solutions such as cultural change, business and trade practices and regulations are explored. Mr. Downs/Offered every other year

**EN207 Climate Change, Energy and Development
(IDCE30205)**

This course explores the environment-energy challenge of development with a particular emphasis on climate change. Human burning of fossil fuels for electricity generation and transportation is changing the earth's climate by changing the composition of the atmosphere. As demand for energy increases in both developing and developed countries and the risks associated with climate change are becoming more evident, the challenges of confronting climate change are mounting. The challenges of climate change mitigation measures and the associated conflicts between developed and developing countries will be explored as will the uneven distribution of climate change impacts in the developing world. Adaptation to climate change as well as mitigation will be discussed. Ms. Stephens/Offered every year, fall semester

**EN261 Decision Methods for Environmental Management and Policy
(IDCE363/GEOG261/361)**

Lecture, Discussion. Information on environmental-impact assessments needs to be systematically organized and analyzed to be useful in the decision-making process. This course provides a survey of methods that are currently used to aid environmental decision makers (who include policy makers, environmental managers and affected populations). Covers techniques such as: decision analysis, benefit/cost analysis, multicriteria evaluation, multiobjective analysis, multiattribute utility theory, the analytical hierarchy process, and spatial-analytical methods using geographical information systems. These methods will be evaluated with respect to their theoretical foundations, systems formulation and appropriate application. A critical evaluation of the strengths and weaknesses of these methods will also be discussed. Mr. Ratick/Offered every year

**EN276 Environmental Law
(IDCE30276/GOVT276/LAS276)**

Lecture, Discussion. A survey course in environmental law, with special emphasis placed on the practical skills necessary to understand and apply environmental laws and regulations. Topics include the history and development of modern environmental law, basic administrative law principles, water-pollution control, wetlands protection, environmental-impact review, solid- and hazardous-waste management, disposal and site remediation, plus land-use controls and “takings” issues. Covers the major federal environmental statutes and draws upon Massachusetts law for examples of state and municipal initiatives. Staff/Offered every year

EN277 Sustainable Consumption and Production

The increasingly unsustainable pressure on the Earth’s natural systems calls for radical changes in the way people in the industrialized and in the rapidly growing economies satisfy their appetite for goods and services. Some believe that innovation in technologies is our great hope, while others emphasize the need to change the consumption patterns of individuals and societies. Both necessitate changes in institutions, values, and social arrangements. This advanced seminar examines the role that changes in technology, institutions and culture might play in bringing about the necessary change toward more environmentally sustainable development. Four types of innovation are discussed: in the production process, in product design, in function delivery by way of products and services, and in a larger sociotechnical system. The course draws on theories of technological innovation, consumer behavior and institutionalism as well as empirical case studies from the United States, Europe and some developing countries. The course considers the key drivers of change, such as government policy, market forces, cultural norms, activities of mission-oriented organizations, social movements and others. Ms. Brown

**EN282 Management of Environmental Pollutants/Seminar
(IDCE382)**

Studies approaches to regulating hazardous chemicals in air, water and food. The course is built around the three general types of interventions that have been practiced by regulatory agencies over the last three decades: shifting to safer technologies; issuing licenses to pollute in the form of industrial emission permits; and setting standards for air, water and food contaminants. The scientific controversies in setting standards and issuing permits are presented vis-à-vis the legislative mandates, the need for benefit-cost accounting and the scientific uncertainty. The strengths and weaknesses of command-and-control system versus the incentive-based system with regard to industrial enterprises are also discussed. Emphasizes recent efforts to decrease government involvement in corporate environmental management and to shift towards an incentive-based regulatory system. While focus is on public policies in the United States, international comparisons with Western European and Eastern European countries are included. The course has a seminar format, with weekly student presentations and class discussions. By instructor permission for undergraduate students. Required for environmental science and policy master's degree students. Ms. Brown/Offered every year

ENG202 Feature Writing

An introduction to the art and craft of feature writing. The feature story is a rendering of reality into words, which, when done well, has its feet in both journalism and literature. We will discuss the elements of the feature story, as well as its various types and formats. We will learn how to find and develop stories, how to perform background research on subjects and how to interview. Course work will include reading and discussing feature stories and assigned texts. Students’ stories will be read and discussed in class. Prerequisites: verbal-expression course; first-year students by permission. Mr. Dempsey/Offered every year

GEOG086 Losing Ground: Examining the Drivers and Consequences of Land Change since the Nineteenth Century SP

How do land use decisions made one hundred years ago and today impact the habitability of our planet? This seminar introduces the topic of land change science to students interested in environmental sustainability, wildlife conservation and forest management. The theories of why humans alter their landscapes and how they alter natural landscapes will be presented using case studies and field trips. Analytic tools for mapping land change will be presented in concert with satellite data that are used to detect change over large, inaccessible areas. Mr. Rogan/Offered Periodically

GEOG216 Field Methods for Environmental Science

Central to scientific work in the environmental sciences is the collection and analysis of field data. In this field-based course students will learn central methods used in environmental science, especially forest ecology. Students will work with the scientific method and explore how to formulate and test hypotheses. Class meets once per week at Tower Hill

Botanic Garden, where students will learn to collect and analyze field data. GEOG116 Forest Ecology is a prerequisite for GEOG216. Mr. Kulakowski/Offered every year

GEOG234 The Geography of Fire
(GEOG334)

Lecture, Discussion. Fire has always been, and will always be a "hot" topic. This course will be one of the first of its kind offered at a university to both undergraduate and graduate students. It examines relationships between wildfire from a physical, biological and cultural perspective. Topics include: the chemistry and physics of fire, fire behavior (including the influences of fuel and weather), the ecological effects of fire, the cultural and institutional framework of fire management, and the cultural nature of wildfire in society. Mr. Rogan/Offered every year

GEOG283 Land-Atmosphere Interactions/Lecture, Discussion

Explores biophysical controls on energy, water, and carbon exchanges between land surfaces and the atmosphere. Examines how biogeography, vegetation physiology, and local to global climates regulate land-atmosphere exchanges, which then feedback on biogeography and climate. The course integrates biophysical, biogeochemical, and ecosystem dynamical processes active in shaping the terrestrial biosphere. Students will also be exposed to methods of land surface and ecosystem process modeling. Mr. Williams/Offered every year

GES017 Culture, Place and the Environment
(GEOG017/COMM017)

GP

Lecture. Ecological and historical approach to cultures and cultural change in a global and spatial context. Broad themes and problems of North America are emphasized: adaptation to "natural" environment; culture in prehistory; migration; creation of cultural areas; fire as a cultural artifact; world views of primitive, traditional and industrial culture; cultural landscape; cultural geography of the United States. One weekly discussion section. Fulfills the Global Comparison Perspective. Mr. Johnson/Offered every year

GES035 The Natural Environment of New England

SP

Field Course. This course applies principles of Earth System Science to examine the natural environment of New England. It serves as both a tour of New England's physical natural environment and as an introduction to Earth System Science. Topics include interactions among the Earth systems as they relate to New England's biodiversity, forests, and landuse (the biosphere); aquatic ecosystems and water resources (the hydrosphere); weather and climate (the atmosphere); and topography and its causes (the lithosphere).Fulfills the Science Perspective. Mr. Kulakowski/Offered periodically

GES087 Introduction to Environmental Information Systems
(GEOG087/ID087)

SP

Lecture, Laboratory. An introduction to fundamental concepts of environmental geographic information science, and a comprehensive survey of the technologies and institutions involved in producing and using geographic data. These include the global positioning system, aerial surveys and photogrammetry, topographic mapping, social surveys such as the U.S. Census, and satellite remote sensing. Overall, this class is a combined introductory class to Geographic Information Systems (GIS), cartography and remote sensing. Fulfills the Science Perspective. Mr. Rogan/Offered every year

GES090 Native Americans, Land and Natural Resources
(HGS090/GEOG090/GEOG197/RER090)

GP

In June of 1975, a gunfight between the F.B.I. and the American Indian Movement (A.I.M.) occurred in South Dakota. The shoot-out was due, in part, to the transfer of Indian land to the U.S. government for uranium and coal development. Some of the most extensive reserves of uranium, coal, oil and gas, gold, copper, timber, water, and other resources lie within reservation boundaries and their development has been fiercely contested by many Native Americans. This course deals principally with the efforts of Native Americans to manage resources, to resist land and resource seizures by corporations and federal and state governments, and to repair damage done to ecological systems. We will examine the history of Native Americans; the appropriation of their lands; corporate natural resource development impacts; contested concepts of "development" and "progress"; and new approaches to resource management including salmon restoration, buffalo management, and wolf reintroduction. These cases will be complemented with others from those places now called Australia, New Zealand, Canada and Ecuador to gain an understanding of how indigenous peoples

**GES127 Political Economy of Development
(GEOG127/ID127)**

GP

Lecture. Why do some people die from over-consumption and others from poverty and starvation? Development theories try to answer this fundamental question. This course critically examines these theories, including classical, neoclassical and Keynesian economies; modernization theory; dependency and world systems theories; postdevelopmentalism; feminism and feminist critiques of development. The course takes students with an initial interest especially in Third World development to a high level of critical understanding. Fulfills the Global Comparison perspective. Mr. Peet/Offered every year

**GES136 Gender and Environment
(GEOG136/ID138/WS138)**

VP

Lecture, Discussion. Explores how gender is reflected in the landscape, in our settlement and land-use patterns, in environmental history, and in our present ecological science and practice from the global to the local level. Combines lectures, readings, discussions, films and local field trips. Reviews feminist and other alternative explanations of the gendered nature of knowledge, access, use and control of space and resources in environments - past, present and possible. Regional focus on New England. Fulfills the Values Perspective. Ms. Rocheleau/Offered every year

**GES141 Research Design and Methods in Geography
(GEOG141/UDSC141)**

FA

Lecture, Discussion. Focuses on ways empirical social-science research is conducted. Students study problems, methodological strategies and analytical techniques characteristic of current social and geographical research. Includes defining a research problem, measurement, sampling, research design, analysis and writing the report. Fulfills the Formal Analysis requirement. A required skills course in the geography major, and strongly recommended for the GES major. Ms. Martin, Mr. Polsky/Offered every year

**GES179 Global Environmental Justice
(ID174/GEOG179)**

Lecture, Discussion. First-Year Seminar (in alternate years) Integrates ecology and political economy from local to global scale through case studies. Starts from a view of people in environmental "hot spots," following links to world economy and planetary ecosystems. Explores connections of international environmental and economic policy with everyday realities and possible ecological futures of people from the Amazon rain forest to the streets of Worcester. Offered as a first-year seminar (fulfills the Verbal Expression requirement) and as a lecture course alternate years. Ms. Rocheleau/Offered every other year

**GES190 Introduction to Geographic Information Systems
(ID190/GEOG190)**

Lecture, Laboratory. This course introduces Geographic Information Systems (GIS) as a powerful mapping and analytical tool. Topics include GIS data structure, map projections, and fundamental GIS techniques for spatial analysis. Laboratory exercises concentrate on applying concepts presented in lectures and incorporate two widely used GIS software packages - IDRISI (created by Clarklabs) and ArcGIS (created by ESRI). These exercises include examples of GIS applications in environmental modeling, socio-demographic change and site suitability analyses. Although the course is computer-intensive, no programming background is required. A formal-analysis course. Counts as skills course or core course in mapping sciences/spatial analysis in geography major. Staff/Offered every semester

**GES224 Economy and Environment
(GEOG224/324/ID222/IDCE30233)**

Lecture, Discussion. Environmental problems are largely the result of economic developments and human settlement patterns. This course involves the examination of different types of economies, various institutional forms and constraints, and cultural features that have environmental implications. Of particular importance are the types of futures that people envision, and the sorts of economic features that must be developed to achieve desirable (or sustainable) futures. Ecological modernization, political and social ecologies, voluntary simplicity, industrial ecology, small entrepreneurial economies, and other discourses/practices will be examined for their economic and environmental implications. Ms. Emel/Offered every other year

**GES226 Who Fears What and Why: Social Theories of Environmental Risks and Hazards
(GEOG226/GEOG326/EPP226/EN226)**

Seminar, Lecture, Discussion. Prerequisite: GEOG141 Research Methods in Geography, or equivalent, or permission of instructor. Introduces advanced undergraduate students and graduate students to the social study of environmental risks and hazards, environmental management and policy, and social impact analysis. Students will explore traditional theories and models underlying risk/hazard analysis, the current debates and research frontiers in the field, and some applied risk/hazard issues of societal concern. Course activities will help students develop the knowledge and writing, presenting and critical-reasoning skills necessary for evaluating environmental risks and hazards. Mr. Polsky/Offered periodically

**GES232 Landscape Ecology
(GEOG232/332/BIOL232/332/ID231/IDCE30214)**

Lecture, Discussion. Considers the relationships between spatial patterns in landscape structure (physical, biological and cultural) and ecological processes. Role of ecosystem pattern in mass and energy transfers, disturbance regimes, species' persistence, applications of remote sensing and GIS for landscape characterization and modeling are examined. Mr. Rogan/Offered every year

**GES237 Feminism, Nature and Culture
(GEOG237/337WS237/337)**

Seminar. The purpose of this course is to expose students to major currents of contemporary social theory that have developed around "nature" and "woman" or nature and gender. We will explore a number of important contemporary topics including: biotechnology and "life," food and identity, the body/science/fashion, human and nonhuman animal relations, and the manner in which conceptualizations of nature and of women (or gender roles) mutually constitute and reinforce one another. Our principal goals are to analyze and critique the normative idea of what is "nature" or what is "natural" as it pertains to gender, environmental processes, other life forms, and human social and economic existence in general. Because feminists have been instrumental in leading much of this analysis and critique, we lean heavily on feminist theories. We will explore these ideas through science fiction, magical realism, cartoons, movies, other fiction, social histories and biographies. By the end of the semester, students should be adept at decoding representations of nature and gender in the popular media as well as in academic scholarship. Students should also have a reasonable understanding of the development of and debates surrounding biotechnology and gender, identity and gender, and ecofeminist thought. Ms. Emel/Offered every other year

**GES247 Intermediate Quantitative Methods in Geography
(GEOG247/IDCE324)**

Lecture, Laboratory. Continues development begun in GEOG110 of computer-based methods in geographical analysis. Focuses on bivariate and multivariate regression, discriminant analysis, factor analysis, log-linear models and analysis of spatial and temporal data. Includes lab work with PCs, spreadsheets and SPSS-X statistical software package. Prerequisite: GEOG110. Meets skill requirement for geography majors and graduate students. Mr. Ratick/Offered every year

**GES263 The Climate System and Global Environmental Change
(GEOG263/363/EN263/IDCE30263)**

Lecture, Discussion. An in-depth look at the global ecosystem and the science of global environmental change. We will deal with the lithosphere, atmosphere, hydrosphere and ecosphere; the linkages between these elements of the earth system; biogeochemical cycling and human perturbation of these cycles; human-induced changes in atmospheric chemistry and surface processes; climate variability over geologic time; and projections of future change. The goal of the course is to provide the scientific background that is necessary for understanding problems of global change and addressing issues of impacts and the many related social and policy questions. Ms. Frey/Offered every year

**GEOG271 Groundwater Hydrology and Management
(GEOG371)**

Lecture, Discussion. Introduces geological and hydrological factors controlling the occurrence and development of groundwater, and the methods and impacts of groundwater management. Ms. Emel/Offered periodically

**GES274 Africa's Development in Global Context
(GEOG274/377/ID230/IDCE30234)**

Explores, in detail, the economic geographies of Sub-Saharan Africa; both their historical development and their contemporary manifestations in commodity chains, business practices, production systems, gender and environmental relations, entrepreneurial and innovative behavior, and rural and urban livelihood strategies. Emphasis is placed on examining how African economies relate to the rest of the world, how globalization is influencing the prospects for growth, autonomy, and sustainability in Africa, and how Africans actually produce, innovate, succeed, and struggle in their business activities. Confronts stereotypes about "backward" economic practices in Africa and encourages students to view Africans as capable agents of economic change not simply as passive victims of global or historical inequalities. Mr. Murphy/Offered every other year

**GES280 Urban Ecology: Cities as Ecosystems
(ID280/IDCE380/GEOG280/380/ UDSC280)**

Lecture, Discussion. Explores ecology and the social and physical geography of cities as systems built, inhabited and managed by people. This class of ecosystem is often neglected except in studies of pollution, yet it is home to many of the world's people and to a surprising number of plant and animal species as well. Readings, lectures, discussion and written work combine landscape and systems ecology with physical and urban geography and environmental justice to broaden our understanding of city environments, both present and possible. Ms. Rocheleau/Offered every year

**GOVT157 The Politics of U.S. Environmental Issues
(GES157/PSTD157)**

Lecture, Discussion. Why have environmental policies emerged or failed to emerge? What is distinctive about the politics of environmental issues? Primary focus is national environmental politics and policy making in the United States. Examines the character of policy action, public ideas, political leadership and institutional development across several prominent environmental issues. Assignments emphasize class discussion, oral presentations, group simulations and short written analyses. GOVT050 strongly recommended. Mr. Cook/Offered every other year

**GOVT216 Comparative Environmental Politics
(EPP216/ID215)**

Lecture, Discussion. Over the course of the past several decades environmental degradation and sustainability have assumed major significance as public-policy issues, both within nations and internationally. However, given the transnational nature of many environmental problems, addressing such problems has proven to be particularly complex and difficult. This course examines the complex nature of environmental policy from both an international and comparative perspective. We will examine the specific challenges that the international nature of environmental problems poses for policy makers. We will also compare different national experiences and strategies for addressing environmental issues with an eye toward identifying the factors, which impede or facilitate success in promoting effective environmental policy. Mr. Posner/Offered every other year

GOVT251 U.S. Social Movements and Interest Groups

Lecture, Discussion. Examines the strategies of social movements and interest groups for mobilizing resources and lobbying the state. Considers theoretical frameworks used to study mobilization and action, including the pluralist, power elite and "cycle" theories for interest groups, and collective action, resource mobilization, and political process models of social movements. Mr. Boatright/Offered periodically

ID112 Leading Issues in Sustainable Development

This course explores the connections between the theory and practice of sustainable development. It draws from political economics, political ecology and human geography. The course also highlights the issues of power and the obstacles they present to the achievement of the objectives of sustainable development. Mr. Fernando/Offered every year

**ID125 Tales from the Far Side: Development and Underdevelopment
(GOVT125)**

Lecture, Discussion. Discussions of geopolitics invariably refer to the problems of Third World (under) development. What is so compelling about the idea of development? Why does it ail much of the so-called Third World? What are some of the solutions to development dilemmas—neoliberal market reforms or attention to women, ethnic groups and other heretofore marginal issues such as the environment? Or is the development enterprise fundamentally flawed as

some postcolonial scholars claim? This course introduces students to key histories, concepts and debates in international development through critical and analytical engagements with fiction, films and theoretical literatures on the subject. Offered every year

**ID131 Local Action, Global Change
(PSTD131/WS131)**

Lecture, Discussion. Introduces students to activism in a broad sense: as both a tool for political action and a mechanism for social and/or economic change. International and community development are discussed as forms of activism. Texts focus on activism not only as it is understood and practiced in the United States, but also as it is found in other parts of the world. This includes grassroots movements against the establishment of dams in India and transnational networking of environmental, women's-rights and human-rights activists. In addition, globalization is considered from an activist perspective—both positive and negative approaches to globalization are examined. Religious-based terrorism is also considered as a form of extreme activism, which is in many ways a reaction to perceived injustice, oppression and lack of alternatives. Students participate in a project at the community or wider level in order to learn about how activism works practically. Students will experience first-hand the opportunities and challenges to affecting change, protecting human rights or raising public awareness. Mr. Bell/Offered every year

**ID245 Culture, Politics, and International Development
(IDCE337)**

Lecture, Discussion. Examines the interplay of culture and politics with international-development practices in an era of increasing globalization. Designed to encourage students to explore recent insights into the workings of discourse and power, and to examine how we can relate, in both theory and practice, these insights to processes of development and resistance to development in the Third World. Considers specific cases and historical processes to understand the effects on local communities of specific development interventions. Mr. Fisher/Offered periodically

**ID253 Social Movements, Globalization and the State
(IDCE373/PSTD253)**

Lecture, Discussion. The emergence of global networks or transnational alliances among local, regional and national social movements, international nongovernmental organizations and advocacy groups has been one of the most politically influential aspects of globalization. This course examines what is new about contemporary social movements, the nature of their transnational alliances, and their potential to transform the way states and citizens relate to one another and to the international political arena. The contested nature of civil society, the uneven influence of globalization processes, and changes in the contexts within which local communities and grassroots groups operate are explored through studies of movements concerned with the environment, human rights, development and women. Mr. Fisher/Offered every other year

**ID260 Quantitative Modeling
(GEOG260)**

Lecture Discussion. Investigates the quantitative and qualitative potential of using mathematical computer models to guide policy in human/environment systems. Students learn to think with a systems perspective while translating their own conceptual models to mathematical models to computer models. Includes lab sessions in the computer room and lectures/discussion in the classroom. Culminates in written and verbal presentations of student projects. Students will gain technical proficiency in Excel and the Visual Basic for Application (VBA) programming language. Prerequisites are GEOG190 Raster GIS or graduate standing or permission. Mr. Pontius/Offered every year

**ID269 Raced Nature, Gendered Developments: The Political Economy of Environmental Conservation
(IDCE30269/WS269)**

Seminar. Concerns about the environment and “local” needs appear central in diverse disciplinary, discursive and organizational realms across the globe. This reading-intensive interdisciplinary seminar will explore the complex and contradictory connections between economic development, the environment, and the needs of “local” peoples. The following questions will frame the seminar discussions: (1) how, why and when did concerns about the “global” environment get linked to economic development? (2) how are “local” peoples shaped by, and shape, these interactions? (3) How do the interconnected discourses of environment and development reconfigure or reinforce existing power relations (especially those that are “raced” and “gendered”)? Open to undergraduate students with permission only. Ms. Asher/Offered periodically

**SCRN107 Introduction to Video Production
(ARTS107/TA107)**

An introduction to the skills and technology required for video production. Each student will conceptualize, design, shoot, and edit three video projects (individual and collaborative). The course explores both the art and craft of moving image production; and there is a strong emphasis on the creation of imaginative and personal work. No Prerequisites, open to nonmajors. Mr. Simon/Offered every semester

SOC205 Sociology of the Environment

Lecture, Discussion. Introduction to environmental sociology, a newly emerging area of interest. Focuses on the reciprocal relationships between society and the environment. The theoretical perspectives of human ecology and political economy are used to illuminate topics such as population, technology and environmental degradation, the environmental movement, north-south environmental conflicts, and food and hunger. Mr. London/Offered every year

**SOC232 Population, Environment and Development
(IDCE333/EPP232/UDSC232)**

Variable Format. Studies the statistical description and analysis of human populations. Focuses on relationships between and among social, cultural, political and economic forces; and population structures, processes and characteristics. Such demographic factors contribute to the understanding of social issues, such as the aging of the population, the changing status of women, rapid world urbanization and Third World economic problems. Mr. London/Offered every year

**SOC265 Social Movements: Quest for Justice
(RER265/PSTD265/EPP265/IDCE30265)**

Variable Format. Modern American movements (labor, civil rights, new left, global justice) are used as examples for discussion of social movements. Problems of framing, resources, and identity are analyzed. The form of the course depends on the number of students registering. Mr. Ross/Offered periodically

SOC276 Environment and Inequality

A capstone seminar that focuses on the relationship between social inequality and environmental problems, especially the connections between the unequal distribution of wealth and power, and the causes and consequences of environmental degradation. All students conduct empirical research using data sets provided by the instructor. Prerequisite: Soc 200. Mr. London/Offered periodically

TA119 Public Speaking

Studio. Students are required to make as many speeches as time permits, so that they may master the fundamentals of public speaking, including the most common situations: presentation of information and persuasive speaking. Ms. Hovenesian/Offered every year

Clark University Registrar's Office - Major Declaration Form (06/17/08)

Name: _____ Clark ID #: _____

Box #: _____ New Advisor: _____ Student's Phone: _____

INSTRUCTIONS: Fill out the applicable section(s) below, obtain required signature(s), and return to the Registrar's Office. To declare a major you MUST HAVE THE DEPARTMENTAL FACULTY ADVISOR SIGN THIS FORM. To declare a double major, you must have the signatures of BOTH departmental advisors. Self-Designed majors (DSEL) must have approval from the Associate Dean of the College in place of a departmental advisor.

First Major:	Second Major (optional):
Department Approval:	Department Approval:
Date:	Date:
<i>Drop Major (no signature required):</i>	<i>Drop Major (no signature required):</i>
Minor (optional):	Concentration (optional):
Department Approval:	Department Approval:
Date:	Date:
<i>Drop Minor (no signature required):</i>	<i>Drop Concentration (no signature required):</i>

Majors are offered in:

Minors are offered in:

Ancient Civilization (DANC)	Global Environ Studies (DGES)	Ancient Civilization (DANC)	Geography (DGEO)
Art History (DARH)	Govt & Int'l Rel (DGOV)	Art History (DARH)	German (DGER)
Biochem & Mol Biol (DBCM)	History (DHIS)	Bioch & Mol Biol (DBCM)	Government (DGOV)
Biology (DBIO)	International Develop (DIDS)	Biology (DBIO)	History (DHIS)
Chemistry (DCHE)	Management (DMGT)	Chemistry (DCHE)	International Develop (DIDS)
Comm & Culture (DCAC)	Mathematics (DMTH)	Comm & Culture (DCAC)	Management (DMGT)
Comparative Lit (DCML)	Music (DMUS)	Comparative Lit (DCML)	Mathematics (DMTH)
Computer Science (DCSC)	Philosophy (DPHI)	Computer Science (DCSC)	Music (DMUS)
Economics (DECO)	Physics (DPHY)	Economics (DECO)	Philosophy (DPHI)
English (DENG)	Psychology (DPSY)	Education (DEDU)	Physics (DPHY)
Environmental Science (DES)	Screen Studies (DSCR)	English (DENG)	Screen Studies (DSCR)
For Lang-French (DFRE)	Sociology (DSOC)	Entrepreneurship (DENT)	Sociology (DSOC)
For Lang-Combined (DCFL)	Self-Designed (DSEL)	Environmental Science (DES)	Spanish (DSPA)
For Lang-Spanish (DSPA)	Studio Art (DART)	French (DFRE)	Theater Arts (DTHE)
Geography (DGEO)	Theater Arts (DTHE)	Global Enviro Studies (DGES)	Women's & Gender (DWGS)
	Women & Gender (DWGS)	Concentrations Offered in:	
		Asian Studies (DASI)	Jewish Studies (DJWS)
		Bioinformatics (DBIF)	Law & Society (DLAS)
		Computational Sci (DCOS)	Peace Studies (DPST)
		Ethics & Public Pol (DEPP)	Race/Ethnic Relations (DRER)
		Holocaust Genocide (DHGS)	Urban Dev Social Chg (DURB)

The Global Environmental Studies
Student Learning Plan

Name:

Date:

The purpose of this plan is to help you clarify your goals, set some objectives, and choose a course of study to achieve those objectives. Working with your advisor you will develop a written document that will serve as a “roadmap” for your path through the GES major and the university in general. This roadmap or learning plan will be revised at least twice a year to reflect your changing perspectives (a normal part of university life) and clearer insights into your goals.

Developing a learning plan is an on-going process, so it’s important for you to revisit the plan twice a year with your advisor during the pre-registration period.

1. What binds the four depth specialization courses you selected?

2. How do your skills courses relate to your depth specialization and your goal?

3. How do the depth specialization courses relate to your goal?

Student’s Signature

Date

Advisor’s Signature

Date

Director’s/Undergraduate Advisor Signature
(required for Senior Clearance)

Date

GES Learning Synopsis Chart

Instructions

- Each student, in the senior year, shall complete a **one-two page learning synopsis** describing how the student has achieved the goals of the GES major. Specific attention should be addressed to:
 - Skills acquired
 - Interdisciplinary approach
 - Global perspective
 - Synthetic understanding of global environmental causes and problems.
- The synopsis must be developed in consultation with, and signed by, two GES faculty. Students should reference specific courses and materials produced in support of learning goals. These should be made available to faculty.
- **The synopsis shall provide a précis of student expertise, designed for GES assessment and as a tool for students to highlight their skills on the job market.**
- **It shall also provide specifics to the GES program as to goals for further student development and growth. (The synopsis can provide “exit interview” data for the program.)**
- Due to student’s advisor by January 31 of senior year.

Goal/Performance Standard	Courses Where Achieved	Materials Produced
Identify/understand sources of and solutions to environmental problems		
Articulate relationships of people, culture, and society with biophysical environment		
Define and describe concepts of sustainability, economic and social justice in a global context		
Identify specific problem/issue of global environmental significance and discuss comprehensive approach to solutions		
Identify and apply appropriate research, literacy, numeracy, and/or mapping and other skills for generating, interpreting and communicating knowledge.		

Global Environmental Studies Major
Major Worksheet

To be filled in by student with advisor's assistance and kept in Geography Department files.
(Please fill out completely)

Student Name: _____ Class _____ Second Major _____
 Advisor: _____ Phone _____ Box # _____
 Email _____ Date: _____

Breadth Courses (5 courses)	Course # & Title	Semester	Year	Grade
<i>The State of the Earth (Required)</i>				
<i>Natural Science (Required)</i>				
<i>Economics/ Political Economy of the Environment</i>				
<i>Government/ Institutions</i>				
<i>Civil Society and Social Movements</i>				
<i>Culture and Environment</i>				

Skills Courses (2 courses)	Course # & Title	Semester	Year	Grade
<i>Course:</i>				
<i>Course (one related to Substantive Specialization):</i>				

Depth Courses (4 courses)	Course # & Title	Semester	Year	Grade
<i>Course:</i>				
<i>Course:</i>				
<i>200 level Course:</i>				
<i>200 level Course:</i>				

Capstone Course (1 course)	Course # & Title	Semester	Year	Grade
<i>Course:</i>				

* A learning plan is required to substantiate your choices

Meetings with advisor:

DATE: NOTES:

DATE: NOTES:

DATE: NOTES:

Global Environmental Studies Major
Minor Worksheet

To be filled in by student with advisor's assistance and kept in Geography Department files.

Student Name: _____ Class _____ Major _____

Advisor: _____ Phone _____

Box # _____ Email _____

Date: _____

Breadth Courses (5 courses)	Course # & Title	Semester	Year	Grade
<i>State of the Earth</i> (Required)				
<i>Natural Science</i> (Required)				
<i>Economics/ Political Economy of the Environment</i>				
<i>Government/ Institutions</i>				
<i>Civil Society/ Social Movements</i>				
<i>Culture and Environment</i>				
Skills Course (1 course)	Course # & Title	Semester	Year	Grade
<i>Course:</i>				
Depth Courses (2 courses)	Course # & Title	Semester	Year	Grade
<i>Course:</i>				
<i>200 level Course:</i>				

Global Environmental Studies
Honor Program Application

Please turn into the Undergraduate Program Assistant in the Geography Office.

Section I: *This Section is to be filled out by the student*

Name: _____ Present Date: _____

Graduation Date: _____ Name of Honors advisor: _____

Semesters you intend on taking part in the honors program: _____ / _____

Working Title of Thesis: _____

Brief Description of Thesis work:

Section II: *This section to be filled out by Undergraduate Program Assistant*

Over all GPA first semester: _____ GES GPA first semester: _____

Over all GPA second semester: _____ GES GPA second semester: _____

Accepted Declined Deferred to Fall semester Senior year

Section III: *This Section to be filled out by student's advisor*

Final Title of Thesis: _____

Date Final Draft received: _____ Date of Honors Thesis Defense: _____

Present at Defense:

(Please sign below)

Reader: _____ Advisor: _____

Deadlines to keep in mind:

Thesis due no later than April 1th

Thesis Defended before April 15th

Honors Designations due by April 30th (to Undergraduate Program Assistant)

***Do not forget to turn in the Final Draft of your Honors Thesis to the Undergraduate**

Program Assistant to be bound. *

Global Environmental Studies
Summary of Requirements

Course Area		#	Major/ Double Major	#	Minor
Breadth	State of the Earth	5	1 <i>State of the Earth</i> ; 1 <i>Natural Science</i> ; Remaining 3 courses from the remaining 4 areas	5	1 <i>State of the Earth</i> ; 1 <i>Natural Science</i> ; Remaining 3 courses from the remaining 4 areas
	Natural Science				
	Economics/ Political Economy of the Environment				
	Government/ Institutions				
	Civil Society and Social Movements				
	Culture & Environment				
Skills	<p><i>Two are required; one related to Substantive Specialization.</i></p> <p>Skills are particularly important to promoting excellent analysis of environmental problems and their solutions.</p>	2	GES 141 (Research Design) is strongly encouraged for all GES majors. <i>Exceptions may be granted on a case-by-case basis.</i>	1	1 course is required
Depth	Sustainability Science	4	4 courses are required; two of which must be taken at the 200 level. Must reflect a logical combination of courses and be approved by your advisor	2	2 courses are required; one of which must be taken at the 200 level
	Culture & Political Ecology				
	Urban Industrial Ecology & Urban Environmental Problems				
	Environmental Risks & Hazards				
	Resource Management				
	Land-Change & Land-Degradation Science				
	Art and the Environment				
	Energy and the Environment				
Capstone	Capstone should be determined by advisor and student	1	Can be taken one of two ways: <i>capstone organized as a research experience or capstone focused on a substantive area</i>	0	No capstone is required for the minor
TOTAL		12		8	



Global Environmental Studies
950 Main Street
Worcester, MA 01610 USA

Contact us at ges@clarku.edu

TEL. 1-508-793-7336

or

1-508-793-7282

FAX: 1-508-793-8881