

tunity to apply the knowledge and skills they have developed in their own progress toward completion of the major. Seminars vary in topic, but each requires participants to complete a substantial writing project and to contribute both formally and informally to classroom discussions.

489, 490. SYE: Projects for Seniors.

Student-initiated projects involving significant study and writing carried out through frequent conferences with a faculty sponsor. Prerequisites: senior standing and a 3.0 GPA in English. Proposals must be approved by the department projects committee in the preceding semester. Fulfills SYE requirement for those eligible.

498. SYE: Honors Projects.

This course is offered in the fall semester only and is for students working on an independent project to submit for departmental honors in the spring semester. Students meet regularly with their individual project advisor and as a group several times during the semester for guidance about conducting research, revising and preparing thesis manuscripts. Prerequisites: senior standing, a 3.5 GPA in English and approval by the departmental projects committee in the preceding semester. Fulfills SYE requirement for those eligible.

Environmental Studies

Major and interdisciplinary majors offered

Professor Harris (chair); **Associate Professor Johns**; **Assistant Professors** Backlund, Lavigne, Rosales. Also **Professors** Greene (psychology), Koon, (physics), Singer (English), Weiner (English), Young (economics); **Associate Professors** Barthelms (biology), Gao (chemistry), Hussmann (English), Johnson (outdoor studies), McKnight (biology), O'Donoghue (physics), Shrady (geology); **Assistant Professors** Assefa (sociology), Boulatoff (economics), Buck (government), Jones (sociology), Pai (biology), Skeels (chemistry), Willson (biology).

Visit the environmental studies department Web page at envstudies.stlawu.edu or by linking directly to it from the Majors and Programs page at www.stlawu.edu.

The increase in consumption and human population coupled with increasing misuse of natural resources has led to serious degradation of the environment and threatens natural ecosystems and human societies which depend upon them. In order to understand these problems, root causes, contemporary drivers and potential solutions, the environmental studies curriculum incorporates environmental science (both natural and social) and perspectives from the humanities (e.g. literature, philosophy).

In environmental studies, students engage the complex nature of environmental problems. Students learn that study of these problems cannot occur piecemeal. A careful examination of the inter-relationships of both natural and social systems is essential if we are to preserve environmental quality and achieve sustainability. The overall aims of the curriculum are to provide specific knowledge of the relationship between traditional disciplines and interdisciplinary perspectives of environmental studies and to foster integrated approaches for environmental problem-solving. Courses explore the holistic nature of environmental issues by analyzing of environmental problems and their solutions. The curriculum includes courses listed with other departments as well as in particular areas of environmental studies.

While many students incorporate off-campus study for at least one semester, most courses focus on the study of rural issues, both inside and outside the classroom, to make maximum use of the Adirondacks and St. Lawrence River Valley.

A student may choose environmental studies as a stand-alone major (B.A.) or as a combined major (see below) in conjunction with other departments (B.S. or B.A.), or use environmental studies as one field in a multi-field major (see Curriculum, Multi-field Major Program). Students can earn a B.S. degree emphasizing environmental science via combined majors with biology, geology, chemistry or psychology; or a B.A. degree in the stand-alone major or in a combined major with economics, English, government, philosophy or sociology.

Students enroll in Environmental Studies 101 in their first or second year and 335 in their sixth or seventh semester. Students intending to pursue an interdisciplinary major in environmental studies must take 101 by the end of their fourth semester. A major in environmental studies cannot be declared later than the end of the fourth week of a student's fifth semester, or equivalent.

Goals For Environmental Studies Majors

Students in environmental studies will:

Gain the capacity to analyze and evaluate how human activities influence the environment on local, regional and global scales;

Understand the underlying scientific basis for existing and emerging environmental issues;

Utilize interdisciplinary approaches appropriate for the complexity of environmental issues and their solutions;

Learn how the scientific understanding of environmental issues is translated into environmental policy and be able to assess the effectiveness of those policies and their implementation;

Understand the evolution of environmental thought in North America as a basis for the contemporary environmental movement;

Recognize justice and sustainability as key elements in environmental decisions and understand the patterns of unequal responsibility for environmental degradation;

Develop the capacity to conduct research and communicate findings to enhance public understanding and to contribute to environmental problem-solving;

Cultivate a personal environmental ethic that includes advocacy for environmental stewardship.

Restrictions

1. For the stand-alone major and all combined majors, Environmental Studies 335 and all ESP (see page xxx) courses must be taken in the environmental studies department at St. Lawrence University.
2. For students undertaking double majors and including environmental studies as one of the two majors, no more than two courses dual-listed with the department of the second major may be counted as electives toward the environmental studies major.
3. For the stand-alone major and all combined majors, no more than two courses can be counted as electives from other institutions and University-approved abroad/away programs.

Stand-Alone Major

The stand-alone major (B.A.) serves students who wish to concentrate their efforts in environmental studies. This major is tailored to individual interests and emphasizes depth in selected sub-areas, as well as the integrative, interdisciplinary approaches of environmental studies.

Requirements

101. Introduction to Environmental Studies. Environmental Science and Policy (ESP) courses	1 unit 4 units
Natural Science course <i>(from dual-listed options)</i>	1 unit
Social Science/Humanities course <i>(from dual-listed options)</i>	1 unit
335. Foundation of Environmental Thought. Electives <i>(from environmental studies ESP and dual-listed courses)</i>	1 unit 3 units
Senior-Year Experience (Environmental Studies 404, 421, 451, 461, 489, 490 or 499)	<u>1 unit</u>
Total	12 units

Interdisciplinary Majors

Environmental studies, in conjunction with other departments, has created 10 interdisciplinary majors, allowing students to integrate substantial efforts in traditional disciplines with environmental studies. These majors are designed for students who wish to acquire expertise in another department while still benefiting from the integrative approaches of environmental studies. Four options are available with natural science departments: biology, chemistry, geology, and psychology. Six options are available with departments in the social sciences and humanities: anthropology, economics, English, government, philosophy and sociology. In each interdisciplinary major, it is essential that the student work closely with advisors in both departments.

Progress in both halves of the interdisciplinary major should take place at about the same pace.

Interdisciplinary Major Core Courses

All interdisciplinary majors in environmental studies require the following courses:

101. Introduction to Environmental Studies. Environmental Science AND Policy (ESP) courses	1 unit 3 units
335. Foundation of Environmental Thought. Electives*	1 unit <u>2 units</u>
Total	7 units

**One elective must be a dual-listed natural science course for B.A. students or a social science or humanities course for B.S. students. Some combined majors require an SYE in either department which may raise the total units to 8 if taken in environmental studies. Honors is always in the major, incorporating both departments and at least one committee member from each department. The faculty mentor may be in either department.*

Environmental Studies–Biology

Interdisciplinary Major Core (listed above) 7 units

Biology

101,102. General Biology. 3 units

221. General Ecology. 1 unit

Electives* 5 units

Total 16 units

**Electives that are dual-listed should be taken under the biology number. These electives count toward the biology portion of the combined major. Biology electives must include two 300- or 400-level courses. No more than one course designated as "major credit restricted" can be used as an elective under biology. Students planning for graduate work in biology should take General Chemistry and Statistics.*

Environmental Studies–Chemistry

Interdisciplinary Major Core (listed above) 7 units

Chemistry

103,104. General Chemistry. *or* 2.5 units

105. Accelerated General Chemistry. 1.25 units

205. Quantitative Analysis. 1.25 units

221,222. Organic Chemistry. 2.5 units

306. Environmental Chemistry and Toxicology. 1 unit

341. Quantum Chemistry and Spectroscopy. *or*

342. Biophysical Chemistry. 1 unit

351. Advanced Organic Laboratory. *or*

352. Physical and Inorganic Chemistry. 1 unit

Total 15 or 16.25 units

Environmental Studies–Economics

Interdisciplinary Major Core (listed above) 7 units

Economics

100. Introduction to Economics. 1 unit

200. Quantitative Methods in Economics. 1 unit

251. Intermediate Microeconomic Theory. 1 unit

252. Intermediate Macroeconomic Theory. 1 unit

308. Environmental Economics. *or*

384. Natural Resource Economics. 1 unit

Electives* 3 units

Total 15 units

**Electives that are dual-listed should be taken under the economics number. Dual-listed electives count toward the economics portion of the combined major. Economics electives must include at least two 300- or 400-level courses. Economics 108 cannot be counted as an elective.*

Environmental Studies–English

Interdisciplinary Major Core (listed above) 7 units

English

A. At least three writing courses, two of which are in the sequence of journalism(*), creative non-fiction(+) or fiction(‡):

201. Introduction to Newswriting.*

241. Techniques of Fiction.‡

242. Techniques of Poetry.

243. Creative Non-Fiction Writing.+

290. Expository Writing.

295. Nature and Environmental Writing.

308. Advanced Creative Non-Fiction Writing.+

309. Feature Writing.*

310. Advanced Fiction Writing.‡

311. Advanced Poetry Workshop.

A relevant special topics course in writing or independent study in writing may count as one course. 3 units

B. At least three literature courses, which must include:

At least one of the following 200-level survey courses:

226. Survey of English Literature.

237. Survey of American Literature.

263. Native American Fiction.

At least one of the following 300-level literature courses:

328. English Romanticism.

331. American Romanticism: 1830-1860.

Or a relevant special topics seminar or independent study in literature.

At least one dual-listed English/ environmental studies course:

346. American Literature and the Environment.

352. Contemporary Literature and the Environment. 3 units

C. An additional 300/400-level course in either writing or literature.

SYE in English or Environmental Studies 1 unit

Total 15 units

Note: Courses that are dual-listed should be taken under the course number for English. These electives count toward the English portion of the combined major.

Environmental Studies–Geology

Interdisciplinary Major Core (listed above) 7 units

Geology

103. The Dynamic Earth. 1 unit

110. Environmental Geology. 1 unit

211. Geomorphology. 1 unit

216. Sedimentology. 1 unit

319. Hydrology and Hydrogeology. 1 unit

347. Geochemistry (see note below) 1 unit

Electives* 1 or 2 units

Senior comprehensive exams tailored to the combined major

Total 14 or 15 units

**Electives that are dual-listed should be taken under the course number for geology. These count toward the geology portion of the combined major.*

COURSES OF STUDY

Geochemistry has a prerequisite of Geology 203, Chemistry 103 and 104 or Chemistry 105, or permission of instructor.

Environmental Studies—Government Interdisciplinary Major Core (listed above) 7 units

Government

103. Introduction to American Politics.*	1 unit
105. Introduction to Comparative Politics.*	1 unit
290. Research Seminars.	1 unit
343. Ecology and Political Thought.	1 unit
Electives**	4 units
Total	15 units

*At least one of these courses must be taken as a writing-intensive course.

**Electives that are dual-listed should be taken under the government number. These dual-listed electives count toward the government portion of the combined major. Government electives must include one international course and one theory course (usually 108 and 206).

Environmental Studies—Philosophy Interdisciplinary Major Core (listed above) 7 units

Philosophy

201. Ancient Philosophy.	1 unit
202. Reasoning.	1 unit
203. Ethical Theory.	1 unit
206. Introduction to Political Theory.	1 unit
208. Modern Philosophy.	1 unit
310. Philosophy of the Environment.	1 unit
Electives*	2 units
Total	15 units

*Electives that are dual-listed should be taken under the philosophy number and count toward the philosophy portion of the combined major.

Environmental Studies—Psychology Interdisciplinary Major Core (listed above) 7 units

Psychology

100. Introductory Psychology. <i>or</i>	
101. Introductory Psychology (with lab).	1 unit
205. Research Methods in Psychology.	1 unit
318. Environmental Psychology.	1.25 units
Electives*	5.25 units
Total	15.5 units

*Electives must include two courses from the biological/acquisition processes list, one from the developmental/social processes list and one from the clinical and applied areas list (see the psychology section of this Catalog). One additional course (beyond 205 and 318) must be taken for lab credit.

Environmental Studies—Sociology Interdisciplinary Major Core (listed above) 7 units

Sociology

110. Global Problems. <i>or</i>	
112. Inequality. <i>or</i>	

124. Dirty Business and the Environment. <i>or</i>	
161. Social Problems and Policy.	1 unit

Other courses may be considered, in consultation with the department chair.

203. Foundations of Social Theory.	1 unit
300. Qualitative Research Methods. <i>or</i>	
301. Quantitative Research Methods.	1 unit

Two socio-environmental dynamics courses 2 units

235. Earning a Living.	
288. Dilemmas of Development.	
314. Nomads in World History.	
377. Sociology of Consumption.	

Other courses may be considered, in consultation with the department chair.

Two electives in sociology*	2 units
SYE in Sociology or Environmental Studies	1 unit
Total	15 units

*Electives that are dual-listed should be taken under the sociology number and count toward the sociology portion of the combined major.

Honors

Students enrolled in one of the environmental studies majors may pursue honors in that major. To qualify for graduation with honors, students must have a minimum grade point average of 3.5 in all courses of the major at the time of graduation. In addition, students must successfully complete an honors project supervised by at least one faculty advisor in the environmental studies core. Juniors interested in the honors program should consult with the environmental studies faculty and enroll in Environmental Studies 499 (SYE: Honors Project) in the fall semester of their senior year. (See also Honors in the Curriculum section of this Catalog.)

Ecological Sustainability Landscape

The environmental studies department cares for and utilizes an approximately 100-acre parcel of University land which encompasses farmland, wetlands, woods, a barn and farmhouse adjacent to the Little River. This working landscape involves students in experiential learning activities in a number of courses, including Energy and the Environment, Sustainable Agriculture, Issues in Air Pollution, Once and Future Forest, and special topics courses. Students help maintain gardens with heirloom crops, a small flock of rare breeds of sheep, a solar panel system, energy conservation

renovations to the farmhouse, and a reforestation effort, among other activities. The farmhouse has a seminar room used for teaching classes. Also, the ESL hosts the Adirondack Semester orientation program in August, and provides space for environmental monitoring equipment for groundwater and the climate monitoring station in collaboration with other science departments of the University.

Courses

The “ESP” designation indicates that this course meets the Environmental Science and Policy (ESP) requirement for the environmental studies major.

101. Introduction to Environmental Studies.

This one-semester course is an introduction to the basic concepts and interrelationships needed to understand the complexities of environmental problems. A survey of the characteristics of natural environments and human populations is followed by a study of environmental degradation and alternative solutions to environmental problems. The student is introduced to the roles of many disciplines (including both the natural and social sciences) in the study of environmental problems. The emphasis of the course is on interdisciplinary thinking.

105, 107. Energy.

This course covers the nature of energy, its application in modern society and a variety of issues associated with that use. We will study the physical principles of mechanical, thermal, electrical, optical and nuclear energy in order to better understand the role of energy in society, focusing on fossil fuels, electric power plants, automobiles, global warming, the ozone layer and energy conservation, as well as nuclear, solar and other power sources. This course makes extensive use of elementary algebra and scientific notation. Physics 107 has a lab component and fulfills the natural science with lab distribution requirement; 105 is taught in a lecture format with shorter integrated lab activities and fulfills the natural science distribution requirement. One of these courses is typically offered every other year. *Also offered as Physics 105, 107.*

108. Economics for Environmentalists.

An introduction to the basic concepts, tools and theories of microeconomics that are applied to problems typically associated with the use of the environment. The course begins with basic microeconomic principles, advances to important economics theories that are commonly used to describe environmental resource allocation problems, and concludes with an examination of case studies such as air pollution and acid rain, destruction of rainforests, climate change, alternative sources of energy and waste disposal. This course does not count toward the major in environmental studies-economics and is not open to first-year students. *Also offered as Economics 108.*

110. Environmental Geology.

This course relates geology, the science of the Earth, to human activities and emphasizes the importance of geology in environmental affairs. Important geologic concepts and fundamental principles necessary to unite the cultural and physical environments are discussed. Topics include natural geologic hazards and interaction

between people and the environment, including human modification of nature, geologic resources and energy. May not be taken following or in conjunction with Geology 103. *Also offered as Geology 110.*

112. Global Climate.

Climate is perhaps the single most important and pervasive factor controlling global ecosystems and human well-being. This interdisciplinary course examines global climate from a historical perspective, beginning with the formation of the solar system and continuing through geologic time to the present. Topics include the development of the atmosphere; the workings of the global “heat engine” of atmosphere, oceans and continents; evidence for past climate change; causes of global climate change; the effects of climate change on human evolution; and the effects of human evolution on the global climate system. This is a team-taught studio lab course satisfying the natural science distribution requirement. *Also offered as Geology 112 and Physics 112 and through Global Studies.*

124. Dirty Business and the Environment.

The Earth is in crisis. In this course we focus on the *social causes* - and solutions - to this crisis. We look comparatively at cultures and economic systems to see which societies have developed ecologically sustainable cultures and economies, then examine some of the effects of corporations on wildlands, agriculture and energy policy. What causes these effects and how do people respond to them? Last, we examine consumerism and different remedies to the effects of corporations, and alternatives, both market and nonmarket. At each step we analyze the principles that lead to ecological sustainability. *Also offered as Sociology 124 and through Peace Studies.*

205. Quantitative Analysis. (1.25 units)

An introductory course dealing with the chemical, physical and logical principles underlying quantitative chemical analysis. Among the broad topics treated are data evaluation, titrimetry, solution equilibria, potentiometry and absorption spectroscopy. Lectures plus one laboratory per week. Prerequisites: Environmental Studies 101; Chemistry 104 or 105 (with a 2.0 grade or higher) or permission of instructor. *Also offered, with variations, as Chemistry 205.*

209. Vertebrate Natural History.

A field-oriented course that explores the biology of vertebrate animals, with emphasis on understanding the diversity, life history, evolution and unique adaptations of vertebrates. The laboratory focus is on developing scientifically sound skills in observation and on learning to identify local vertebrates. Some extra class meetings are required for regional field excursions and for early-morning bird-watching sessions. Prerequisites: Environmental Studies 101, Biology 101, 102 or permission of instructor. *Also offered as Biology 209 and through Outdoor Studies.*

211. Geomorphology.

Geomorphology, literally “earth-shape-study,” is the study of the landscape, its evolution and the processes that sculpt it. The purpose of this course is to enhance the student’s ability to read geologic information from the record preserved in the landscape. This is achieved through understanding the relationship between the form of the Earth’s surface and the processes that shape that form. Students combine quantitative description of the landscape with study of landscape-shaping processes into a comprehensive investigation of the dynamic landscape system including glaciation, hills, rivers, mountains and plains. Prerequisite: Environmental Studies 101. *Also offered as Geology 211.*

213. Seeing History: Reading the Natural and Cultural Landscape. (ESP)

How can we study history by looking at our surroundings? How can we interpret the past through what we see at present? Why does such an analysis help us understand contemporary environmental dilemmas? This field-oriented seminar addresses these questions through directed readings and experiential exercises. Students and faculty will construct the history of both natural sites and abandoned farms by identifying flora and fauna, as well as examining ecological relationships and agricultural artifacts. We will also compose the history of cities by looking at urban design and patterns of development. Prerequisite: Environmental Studies 101. *Also offered through Outdoor Studies.*

216. Climate Change Policy and Advocacy. (ESP)

This course focuses broadly on the actions groups of people take in the face of climate change. Major focus is on the way knowledge, worldviews and power are used by governments in climate change decision-making; we also consider how groups of individuals act, and climate change policy and attendant critiques at the international, national and state levels. Particular focus is given to the Kyoto Protocol and how it developed within the United Nations under the Framework Convention on Climate Change (UNFCCC). The class incorporates climate change science and impacts as they become known, and policy as it happens. Students also get involved with the climate change movement. Prerequisite: Environmental Studies 101. *Also offered through Peace Studies.*

221. General Ecology.

A study of the factors influencing the abundance and distribution of species, including interactions between individuals and their physical/chemical environment, population dynamics and the structure/function of communities and ecosystems and their responses to disturbance. Labs are field-oriented and emphasize characteristics of local communities or specific techniques such as estimation of population density. Lectures and one lab per week. Prerequisites: Environmental Studies 101; Biology 101, 102 or equivalent; or permission of instructor. *Also offered as Biology 221 and through Outdoor Studies.*

231. Health Effects of Pollution. (ESP)

An introduction to the scientific study of environmental agents and their human health effects. Emphasis is on the environmental causes of disease, including biological agents, hazardous waste, radiation, pesticides, flame retardants, drinking water contaminants, food additives, housing, occupational hazards and stress. Case studies illustrate how health effects are investigated by epidemiology and how theories of disease have evolved. Procedures for establishing regulatory policy and health standards are also discussed. Prerequisite: Environmental Studies 101.

240. Environment and Resource Use in Kenya.

The contrast in Kenya's physical and human environment is addressed, between highland and lowland, cropland and rangeland, domestic livestock and wildlife, modern and traditional ways of life and land-use systems. The impact of the colonial regime on land ownership and resource use is studied with reference to certain ethnic groups. Responses to changing economic and political conditions in the postcolonial era are also discussed. Prerequisite: Environmental Studies 101. *Also offered as Anthropology 240.*

249. Outdoor Recreation and Public Land. (ESP)

Land managers are often charged with the contradictory responsibilities of allowing for an "unconfined" recreation experience while simultaneously maintaining a high degree of resource protection. This course is an interdisciplinary investigation into the phenomenon of outdoor recreation. Emphasis is given to wildland recreation-activities that are dependent on undeveloped settings. The course examines the biophysical and social science of recreation used to inform policy and planning approaches. Examples of recreation issues are drawn primarily from North America and, where applicable, the course takes advantage of the nearby Adirondack Park for field experience and research. Prerequisite: Environmental Studies 101.

251. Independent Projects in Environmental Studies.

For students desiring to do individual research in environmental studies. May be elected only after submission of a written proposal during the prior semester and approval by core faculty of environmental studies. Prerequisites: Environmental Studies 101 and permission of instructor.

255. Environmental Perception and Indigenous Knowledge.

People in different cultures perceive their environment in different ways and have bodies of systematic knowledge relating to land, water, soil, plants and animals upon which they base their use of these resources. This course attempts to show how indigenous people understand the interrelationship of the different elements of their environments and have used them for sustainable livelihood. The impact of Western knowledge systems and commercial interests on indigenous communities is discussed, with reference to African and American case studies. Prerequisite: Environmental Studies 101. *Also offered as Anthropology 255 and through African Studies and Native American Studies.*

258. Ethnobotany.

Ethnobotany is an interdisciplinary field drawing on concepts from both natural and social sciences to investigate human-plant interactions. This course illustrates the importance of plants in our everyday life and the influence of human activities on plant populations. Independent projects center around surveys and experiments on socio-economically important plants. Field trips and labs explore Native American reservations, botanical gardens, greenhouses, nature reserves and plant population survey techniques. Three hours lecture and one three-hour laboratory per week. Prerequisite: General Biology (101) and Environmental Studies 101. *Also offered as Biology 258.*

261. Sustainable Agriculture. (ESP)

This course introduces students to the ecological, economic and social dimensions of agriculture, both food and fiber. We critically examine modern, large-scale, industrialized agriculture-how it has arisen and how it affects land, water, biodiversity and human communities-and analyze whether it is sustainable. We then evaluate a variety of models that might represent more sustainable systems, including Native American, organic and local food systems. Students visit several local farms and gain hands-on experience in the gardens at the Ecological Sustainability Landscape. Prerequisite: Environmental Studies 101. *Also offered through Peace Studies.*

263. Global Change and Sustainability. (ESP)

This course broadly considers the stability of how humans relate to the environment. It examines how social systems can be organized

to lessen their impact on natural systems, lessen inequalities within generations, and ensure the viability of natural resources for future generations. To do this, the course focuses on international policy as developed through the United Nations and affiliated institutions. National policy is considered, where appropriate, as examples of leadership or obstruction in diminishing human impact on the environment. Students consider local case studies that exude principles of sustainability. The concept of sustainability in the face of global change is critically examined throughout the course, including issues of ecological integrity and social justice. Prerequisite: Environmental Studies 101. *Also offered through Peace Studies.*

275. Energy and the Environment. (ESP)

This course addresses energy supply and use from individual, local, regional, national and global perspectives. The differences provide a common theme; emphasis is on how they force trade-offs and translate into energy-related decisions and policy. Production, use and impacts of energy sources are considered throughout the stages of systems that supply energy in usable forms to society. An overview of historical energy transitions leads into a look at current energy use practices and trends, ultimately focusing on development throughout the next 20-50 years. Special emphasis is given to local and regional energy concerns, such as hydroelectric power, and alternative sources including biomass and wind. A large segment of the course details strategies for reducing energy consumption. Prerequisite: Environmental Studies 101. *Also offered through Peace Studies.*

295. Nature and Environmental Writing.

This course is designed for students who want to explore nature writing—the intersection of self and the natural world. We explore how this genre combines the observational, scientific “eye” with the personal, narrative “I” through readings in non-fiction anthologies, novels and/or memoirs. Students write essays on nature and the environment that reflect different objectives within the genre, such as the political essay, the literary field study and the personal essay. Students also keep a “naturalist’s journal.” Discussion of the readings is interspersed with workshop sessions. Prerequisite: Environmental Studies 101. *Also offered as English 295 and through Outdoor Studies.*

301. Pollution of Aquatic Ecosystems. (ESP)

(1.25 units)

After introducing major physical, chemical and biological aspects of the ecology of lakes, rivers and coastal waters, the course focuses on the consequences of human activities on aquatic ecosystems: cultural eutrophication, oxygen-demanding wastes, persistent toxic chemicals, acidification, oil and metal pollution, global warming, and the effects of water diversions and impoundments. Projects emphasize water sampling and analysis, stream assessment using biotic indices, analysis of contaminants in runoff and sediments, and models of phosphorus in lakes and bio-accumulation of persistent toxins. Prerequisite: Environmental Studies 101 or Biology 101 or Geology 103. *Also offered through Global Studies.*

302. Air Pollution. (ESP)

This course examines the sources, chemistry, transport and ecological and social impacts of major air pollutants. Our scale of study moves from global to regional to local. Issues include global climate change, stratospheric ozone depletion, urban air quality, photochemical smog, acidification and local industry. Emphasis is on consequences of industrialization and urbanization in both developed and developing countries. While primary focus is on ecological impacts, we also

consider the equity issues, policy and implementation strategies for protecting air quality. Prerequisite: Environmental Studies 101. *Also offered through Global Studies and Native American Studies.*

306. Environmental Chemistry and Toxicology.

This course is designed for chemistry majors and students in environmental studies who have a strong background in chemistry. It explores the sources and levels of chemical pollutants, the pathways along which they move through the environment and the toxicological effect they have on humans and other living things. A laboratory program accompanies the lecture. Prerequisites: Environmental Studies 101 and Chemistry 221 or permission of instructor. *Also offered as Chemistry 306.*

308. Environmental Economics.

An analysis of deficiencies in the market system and the existing property rights structure that generate pollution problems in industrial society. Alternative policy options are considered, including incentive-based approaches and cost-benefit analysis. Prerequisites: Environmental Studies 101 and Economics 251. *Also offered as Economics 308.*

310. Philosophy of the Environment.

Our current environmental problems are due primarily to the total volume of human consumption. This course focuses on the problem of high consumption in developed countries and possible solutions for it. Is this high consumption necessary for our happiness, or could we be just as happy while doing less damage to the natural world? If we could, as many environmentalists argue, why do so few of us live as though we truly believe it? Is it possible to consume less, either as individuals or as a society? What kinds of changes are feasible in society to reduce our damage to the natural world? The course offers a theory of happiness intended to make it possible to answer these questions. Prerequisite: Environmental Studies 101. *Also offered as Philosophy 310 and Outdoor Studies 310 and through Peace Studies.*

318. Environmental Psychology.

This lecture-lab course studies the relationships between humans and physical environments, both natural and built. Topics include environmental assessment, attitudes and behavior toward the environment, and the psychological effects of such environmental factors as crowding, architectural design, extreme environments, pollution and natural disasters. Prerequisites: Environmental Studies 101 and Psychology 100 or 101. *Also offered as Psychology 318 and through Peace Studies.*

319. Hydrology and Hydrogeology.

This course provides an introduction to the movement and storage of water on the Earth’s surface (hydrology) and in the subsurface (hydrogeology). We discuss the fundamentals of the water cycle and hydrologic processes at the surface, the transfer of water in and out of the subsurface and the processes of groundwater flow. Human impacts upon water are also examined, including water resources, contamination, changing land-use and climate change. Prerequisite: Environmental Studies 101. *Also offered as Geology 319.*

321. Land-Use Planning. (ESP)

An interdisciplinary approach to land-use planning that both satisfies human needs and protects the environment. Topics include human settlement patterns, urban development and sprawl, farmland preservation, habitat and groundwater protection, and coastal zone management. Procedures of traditional land-use planning and

neo-traditional design are emphasized, including zoning, site plan review, preferential tax policies, acquisition of easements and transfer of development rights. The course integrates theory and methods within an applied context. Prerequisite: Environmental Studies 101.

326. Once and Future Forests. (ESP)

This course concentrates on the ecological conservation and restoration of past and future forests in the North Country. Students consider both old-growth forest conservation and new forest restoration. This is an applied, field-oriented, community-service, project-based course. Students work on two ongoing projects: they conduct old-growth forest inventories searching for old forests and continuing the work of the ongoing St. Lawrence County Old-Growth Program; and they work to restore the forest and stream running through the department's Ecological Sustainability Landscape (ESL). Thus, students are exposed to the complexities and difficulties of contemporary forest ecology and management as they learn how to actively conserve and restore forests. Prerequisite: Environmental Studies 101.

335. Foundation of Environmental Thought.

An examination of environmentalism formulated by naturalists and writers in North America. Emphasis is on a historical understanding of attitudes toward the natural world. Format is primarily seminar. A brief review of global environmental history looks at the rise and fall of various civilizations at different times in different parts of the world. Discussion then focuses on the writings of Thoreau, Muir, Leopold, Carson, Abbey and other naturalists of historical significance, as well as contemporary writers emphasizing indigenous knowledge and current issues. Problems of industrialization, limits to growth, sustainability and public land programs are also covered. Prerequisite: Environmental Studies 101. *Also offered through Outdoor Studies.*

343. Ecology and Political Thought.

Ecology reminds us that our activities are embedded within natural systems. What is the significance of this fact for politics? This course examines how various actors, such as citizens, consumers, social movements, scientific experts, and governmental agencies, conceptualize the relationship between humanity and the natural world. We will evaluate the merits and shortcomings of a variety of approaches to environmental politics, including survivalism, sustainable development, deep ecology, ecofeminism and the environmental justice movement. The course does not satisfy the department's major requirement in political theory. Prerequisite: Government 206 or permission of instructor. Prerequisite: Environmental Studies 101. *Also offered as Government 343.*

346. American Literature and the Environment.

A study of the literary response to the taming of the American wilderness. The course focuses on the close association of nature and art in American literature, examining how American writers, in shaping story and poem, have tried to reconcile the processes and values associated with "wilderness" and "civilization." Some attention is given to the historical and cultural backgrounds of the wilderness theme. Writers such as Crèvecoeur, Jefferson, Cooper, Thoreau, Melville, Twain, Whitman, Jewett, Frost, Faulkner, Cather, Steinbeck, McPhee and Dillard are studied, but an effort is made to choose works not usually taught in the surveys of American literature. Prerequisites: Environmental Studies 101 and two lower-level courses in English or permission of instructor. *Also offered as English 346 and through Outdoor Studies.*

347, 348. Special Topics.

An in-depth consideration of some area of environmental studies not covered in regular course offerings. The specific topic normally is an advanced study of some interdisciplinary problem.

351. Internships in Environmental Studies.

Student-arranged study with an environmental organization. The internship comprises three parts: contact with daily operations; intensive work on one particular project; and extensive reading in appropriate areas. May be elected only after submission of a written proposal during the prior semester and approval by core faculty of environmental studies. A letter of support must be received from the sponsoring organization. Prerequisites: Environmental Studies 101 and permission of instructor.

352. Contemporary Literature and the Environment.

A study of the contemporary literary response to rising national interest in the natural world and rising awareness about the danger to natural resources. Readings are predominantly in prose (novels and essays), with some poetry included. Among the questions the authors ask: as we approach the natural world, how can we move beyond metaphors of dominion? What are the biases of gender, geography and culture that we bring to our inquiry? What is the relationship between the human and the "natural"? What does it mean to fully invest ourselves in our local environment? Prerequisite: Environmental Studies 101. *Also offered as English 352 and through Outdoor Studies.*

357. Industrial Ecology (ESP)

This course focuses on industrial systems to understand the impacts of products and processes from environmental, social, and economic perspectives. Strategies to reduce the environmental impacts of production and consumption are addressed. Ecological mass and energy flows offer a model for the sustainable development of industrial systems, moving from an open-loop to a closed-loop mentality. This course introduces the tools and techniques utilized in the field of industrial ecology, focusing on life cycle analysis. The methods of industrial ecology are used to study emerging technologies and concepts, such as biomimicry and nanotechnology. Prerequisite: Environmental Studies 101.

361. Research Seminar in Environmental Studies.

Faculty-directed research designed for small groups of advanced students. The focus is often on environmental problems of northern New York. Topics are usually defined in response to needs identified by local communities. The course draws together the expertise of students from different majors. Basic concepts and methodologies of field research are applied in practice. Prerequisites: Environmental Studies 101 and permission of instructor.

362. International Law.

A study of the development of the rules and principles of international law and of their current applications. Examination of the contributions of international organization to the development of conventional international law. Preparation of topics for class presentation. Prerequisites: Environmental Studies 101 and Government 108 or permission of instructor. *Also offered as Government 362 and through Peace Studies.*

363. Tourism and the Environment. (ESP)

Tourism is often promoted as a sustainable way for communities to capitalize on natural environments without the impacts of extractive industries. Although no trees are logged or mines are dug, tourism

permanently alters the social fabric and natural landscapes of communities that embrace it. This course critically examines tourism and its effects on the environment and local cultures. The extensive literature on this topic is examined from managerial, industry and participant perspectives. Examples are drawn from the United States and internationally, with a special emphasis on the practice and management of ecotourism. Prerequisite: Environmental Studies 101.

380. Tropical Ecology.

A seminar course based on current research in tropical biology. Emphasis is on the structure, function and biology of tropical organisms and ecosystems, especially as compared to temperate systems. Lectures include South American, Australasian and African tropical ecosystems. The course addresses the role of plant-animal interactions, mutualisms, sustainable development, conservation measures and the roles of indigenous cultures in tropical ecosystems. Prerequisites: Environmental Studies 101 and 221. *Also offered as Biology 380 and through Global Studies and Outdoor Studies.*

384. Natural Resource Economics.

This course complements Economics 308 (Environmental Economics). Standard economic approaches to problems of natural resources are presented and criticized from a variety of different perspectives to give students a deeper appreciation of the role of economic analysis in coping with natural resource scarcity. Specific topics include economics and population growth, economics and environmental ethics, ecological economics and sustainability, biodiversity and water resources. Prerequisites: Environmental Studies 101; Economics 200 and 251 or permission of instructor. *Also offered as Economics 384.*

404. SYE: The Green Backlash: Science and Politics of Environmental Opposition.

Since 1970, a broad-based environmental movement has mobilized widespread public support for ecological protection. Successful incorporation of environmental concerns into the mainstream political agenda in industrialized countries has spurred an active opposition from diverse interests. Are environmentalists really scare-mongering, elitist, anti-progress, anti-human tree-huggers? In seminar format we evaluate the works of selected environmental critics; analyze the origins, agenda, actions and interconnection of these critics; and assess strategies for response. Students undertake a major individual research project evaluating the underlying science and the stances in selected controversies. Prerequisites: senior standing in the major and permission of instructor.

421. SYE: Directed Readings.

Directed study for an individual or small group of students, based on an in-depth exploration of the literature. The topic is usually an extension of normal offerings in the curriculum. Prerequisites: senior standing and permission of instructor.

440. Conservation Biology.

This course examines the problem of maintaining biological diversity in a changing world. Emphasis is on the biological concepts involved in population biology, genetics and community ecology, and their use in conservation and management of biodiversity. Labs mix local projects and trips to sites of interest for conservation. Prerequisites: Environmental Studies 101; Environmental Studies 221 or Biology 245/246 or permission of instructor. *Also offered as Biology 440 and through Global Studies.*

451. SYE: Senior Internship.

Student-arranged study with an environmental organization. The internship comprises three parts: contact with daily operations; intensive work on a particular project; and extensive reading in appropriate areas. May be elected only after submission of a written proposal during the prior semester and approval by core faculty of environmental studies. A letter of support must be received from the sponsoring organization. Prerequisites: senior standing and permission of instructor.

461. SYE: Research Seminar.

Faculty-directed research designed for small groups of advanced students. The focus often is on environmental problems of northern New York. Topics for the course are usually defined in response to needs identified by local communities. The course draws together the expertise of students from different majors. Basic concepts and methodologies of field research are applied in practice. Prerequisites: senior standing and permission of instructor.

489,490. SYE: Senior Research.

Special research designed by senior students on an individual basis with the faculty sponsor. Specific topic is a more detailed study of some interdisciplinary environmental problem in which the student as background from prior coursework. Prerequisites: senior standing and permission of instructor.

499. SYE: Honors Project.

Special research designed by senior students on an individual basis. The specific topic is a detailed study of some interdisciplinary problem in which student has undertaken prior coursework and study. The project is usually undertaken in the fall semester of the senior year as an honors thesis. Requires minimum GPA of 3.5, submission of a written proposal in the junior year and approval by core faculty of environmental studies. The lead mentor for the project may be either in the core faculty or an environmental studies dual-listed faculty member. At least one reader must be from the environmental studies core faculty. Prerequisites: senior standing and permission of instructor.

European Studies

Minor offered

Advisory Board: Professors Limouze (fine arts); **Associate Professors** Breashears (English), DeGroat (history), Jenkins (economics), Llorente (modern languages and literatures), Salvi (modern languages and literatures); **Assistant Professors** Buck (government), Gabriel (coordinator; history).

Visit the European studies Web page by linking directly to it from the Majors and Programs page at www.stlawu.edu.

European studies integrates course work from several fields into an interdisciplinary program of study. The minor allows students to engage in a critical examination of European society, including cultural, economic, and political issues of