



Environmental Studies

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PROGRAM DESCRIPTION

Many of the greatest challenges currently facing human society concern the strained relation between a resources-intensive global civilization and the ecological systems of the world on which it relies. Environmental Studies is an interdisciplinary field that has emerged in response to these challenges, bringing together natural science, social science, the humanities, and the professions to understand and solve complex environmental problems and conceptualize the workings of communities that are truly environmentally sustainable.

The Environmental Studies Department offers students formal academic programs through which they can engage with environmental issues effectively by integrating skills and knowledge from many different disciplines. The major in Environmental Studies consists of a core sequence of required interdisciplinary courses coupled to one of four concentrations, allowing each student to pursue the aspect of environmental studies of most interest to her. The concentration areas are Environmental STEM; Global Environmental Policy; Nature, Culture, Arts; and Spirituality, Justice, Ethics. The minor in Environmental Studies is a flexible program that offers students the opportunity to integrate their environmental interests with work in another major field through independent, hands-on projects as well as through regular coursework.

ENVIRONMENTAL STUDIES PROGRAM LEARNING OUTCOMES

A student *majoring* in Environmental Studies will:

- Understand and analyze the processes and principles of natural phenomena and the human actions underlying environmental challenges.
- Identify and analyze connections between the natural environment and social justice concerns due to the unequal impact of environmental challenges on groups, for example, as distinguished by genus, race, ethnicity, gender, class, culture, sexuality, or geography.
- Articulate the historical forces shaping cultural conceptions of nature.
- Understand the interplay between local and global scales of sustainability within natural and human systems.
- Integrate knowledge and skills from multiple disciplines to evaluate environmental challenges and potential solutions.
- Develop community, management, and leadership skills necessary for advocacy on environmental challenges.

A student *minoring* in Environmental Studies will:

- Demonstrate a thorough understanding of the processes and principles of natural phenomena underlying environmental problems and issues and the role of humans in them.
- Identify the theoretical and empirical connections between the natural environment and sustainability or social justice concerns, including the differential or unequal impact of environmental problems on groups distinguished by race, ethnicity, gender, class, and/or geography.
- Understand and analyze the cultural specificity of ideas and concepts concerning nature and the environment.
- Use appropriate multidisciplinary methods to identify, articulate, and critically evaluate environmental problems and their solutions.
- Develop interpersonal and organizational skills necessary for effective advocacy and engage in informed advocacy on environmental issues.
- Integrate and synthesize the knowledge and skills gained from different disciplines with respect to environmental issues.

ADVANCED WRITING PROFICIENCY

Students fulfill this proficiency requirement by receiving approval for a portfolio of three writing projects drawn from multiple disciplines contributing to environmental studies. The portfolio will include the paper completed in ENVS 495; the other two projects included will vary with the student's major concentration and selection of courses.

SENIOR COMPREHENSIVE

The Senior Comprehensive requirement in Environmental Studies is fulfilled by successful completion of ENVS 495 and department approval of the paper and oral presentation based on the student's comprehensive project.

PROGRAM IN ENVIRONMENTAL STUDIES

Major in Environmental Studies—ENVS (40-75 hours)

The following are required. In addition, at least one concentration must be chosen.

All of the following (19 hours):

ENVS 161	Introduction to Environmental Studies	3 hours
ENVS 171	Introduction to Environmental Science	3 hours
ENVS 217	Environmental Policy	3 hours
COMM 418	Women, Leadership, and Communication	3 hours
ENVS 385	Interdisciplinary Environmental Research Methods	3 hours
ENVS 386	Current Issues in Environmental Studies	1 hours
ENVS 495	Comprehensive Project Seminar	3 hours

Environmental STEM Concentration (51-56 hours)

One Environmental Ethics Course:

PHIL 256	Environmental Ethics	3 hours
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One Environmental Biology Course:

BIO 316	Conservation Biology	4 hours
BIO 323	Ecology	4 hours

One Environmentally-Related Science Elective:

BIO 308	Vertebrate Natural History	4 hours
BIO 316	Conservation Biology	4 hours
BIO 323	Ecology	4 hours
BIO 332	Ornithology	3 hours

CHEM 311	Thermodynamics	3 hours
PHYS 205	Nuclear Science (will be PHYS 235)	3 hours
PHYS 302	Materials Science(will be PHYS 215)	3 hours
PHYS 311	Thermodynamics (will be PHYS 343)	4 hours

With program permission, the following earth or water science courses offered at Notre Dame may be used to fulfill this requirement: CE 20110 – Planet Earth, CE 20520 – Environmental Mineralogy, CE 20320 – Environmental Aquatic Chemistry.

Four Courses in an Area Focus, either (a) Applied Mathematics or (b) Earth and Water Science

(a) Applied Mathematics

MATH 231	Calculus III	4 hours
MATH 326	Linear Algebra and Differential Equations	4 hours
MATH 335	Differential Equations II	3 hours
or MATH 336	Numerical Analysis	3 hours
MATH 381	Mathematical Modeling	3 hours

(b) Earth and Water Science Courses (at Notre Dame) chosen from

CE 20110	Planet Earth	3 hours
CE 20320	Environmental Aquatic Chemistry	3 hours
CE 20520	Environmental Mineralogy	3 hours
CE 30300	Intro to Environmental Engineering	3 hours
CE 30320	Water Chemistry and Treatment	3 hours
CE 30455	Environmental Hydrology	3 hours

Required Supporting Courses

All of the following:

CHEM 121-122	Principles of Chemistry I, II	8 hours
PHYS 121-122	General Physics I, II	8 hours
MATH 131-132	Calculus I, II	8 hours
or MATH 133	Theory and Application of Calculus	4 hours
MATH 345-346	Probability, Statistics (Applied Mathematics focus)	6 hours
or ACMS 30440	Probability and Statistics (Earth & Water Science focus)	3 hours

Global Environmental Policy Concentration (24-25 hours)

One STEM Elective chosen from:

ANTH 254	Survey II: Human Prehistory	3 hours
BIO 109	Marine Biology	3-4 hours
BIO 308	Vertebrate Natural History	4 hours
BIO 312	Evolution	3 hours
BIO 316	Conservation Biology	4 hours
BIO 323	Ecology	4 hours
BIO 332	Ornithology	3 hours
CHEM 102	Chemistry in Everyday Life	3 hours
MATH 107	Mathematics for Sustainability	3 hours

One Arts and Humanities Elective chosen from:

ART 236	Sustainable Textiles	3 hours
EDUC 466	Communicating Climate Science	3 hours
ENLT 211	Animals in Literature and Society	3 hours
ENLT 212	Ecopoetics in the Age of the Anthropocene	3 hours
ENLT 213	Environmental Literature	3 hours
ENVS 331	Human Ecology and Spirituality	3 hours
PHIL 254	Social Justice	3 hours
PHIL 256	Environmental Ethics	3 hours
RLST 351	Religion and Science	3 hours

One Microeconomics Course:

ECON 252	Microeconomics	3 hours
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One Introductory Course in Society and Environment chosen from:

ANTH 141	People and Nature	3 hours
ANTH 253	Survey I: Culture and Language	3 hours
SOC 203	Social Problems (approved sections)	3 hours

Three Advanced Area Courses chosen from:

ANTH 392	Topics in Cultural Anthropology	3 hours
ECON 354	Economic Development	3 hours
POSC 319	Global Politics of International Development	3 hours
POSC 326	Global Environmental Politics	3 hours
SOC 306	Consumer Society	3 hours

Required Supporting Courses**One of the following:**

MATH 114	Introduction to Statistics	3 hours
or MATH 346	Statistics	3 hours

With program permission and permission of the relevant department, PSYC 324 or SOC 371 may be substituted for MATH 114.

Nature, Culture, Arts Concentration (21-22 hours)**One STEM Elective chosen from:**

ANTH 254	Survey II: Human Prehistory	3 hours
BIO 109	Marine Biology	3-4 hours
BIO 308	Vertebrate Natural History	4 hours
BIO 312	Evolution	3 hours
BIO 316	Conservation Biology	4 hours
BIO 323	Ecology	4 hours
BIO 332	Ornithology	3 hours
CHEM 102	Chemistry in Everyday Life	3 hours
MATH 107	Mathematics for Sustainability	3 hours

One Environment and Society Elective chosen from:

ANTH 141	People and Nature	3 hours
ANTH 253	Survey I: Culture and Language	3 hours
ECON 354	Economic Development	3 hours
GWS 240	Gender and Environmental Justice	3 hours
JUST 250	Intro to Justice Studies	3 hours
POSC 319	Global Politics of International Development	3 hours
POSC 326	Global Environmental Politics	3 hours
SOC 203	Social Problems (approved sections)	3 hours
SOC 306	Consumer Society	3 hours

Four Explorations Courses chosen from:

No more than two courses may be taken in a single discipline (as indicated by course prefix).

ANTH 253	Survey I: Culture and Language	3 hours
ART 236	Sustainable Textiles	3 hours
EDUC 466	Communicating Climate Science	3 hours
ENLT 211	Animals in Literature and Society	3 hours
ENLT 212	Ecopoetics in the Age of the Anthropocene	3 hours
ENLT 213	Environmental Literature	3 hours
ENVS 331	Human Ecology and Spirituality	3 hours
HUST 103	Lives and Times (approved sections)	3 hours
PHIL 254	Social Justice	3 hours
PHIL 256	Environmental Ethics	3 hours
RLST 351	Religion and Science	3 hours

One Theoretical Applications Course chosen from:

ANTH 320	Anthropology of Race and Racism	3 hours
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ANTH 346	Gender in Cross-Cultural Perspective	3 hours
ANTH 392	Topics in Cultural Anthropology	3 hours
ENLT 385	Critical Theory	3 hours
GWS 350	Feminist Theory	3 hours

Spirituality, Justice, Ethics Concentration (21-22 hours)**One STEM Elective chosen from:**

ANTH 254	Survey II: Human Prehistory	3 hours
BIO 109	Marine Biology	3-4 hours
BIO 308	Vertebrate Natural History	4 hours
BIO 312	Evolution	3 hours
BIO 316	Conservation Biology	4 hours
BIO 323	Ecology	4 hours
BIO 332	Ornithology	3 hours
CHEM 102	Chemistry in Everyday Life	3 hours
MATH 107	Mathematics for Sustainability	3 hours

One Arts and Culture Elective chosen from:

ANTH 141	People and Nature	3 hours
ANTH 253	Survey I: Culture and Language	3 hours
ART 236	Sustainable Textiles	3 hours
EDUC 466	Communicating Climate Science	3 hours
ENLT 211	Animals in Literature and Society	3 hours
ENLT 212	Ecopoetics in the Age of the Anthropocene	3 hours
ENLT 213	Environmental Literature	3 hours
SOC 306	Consumer Society	3 hours

One foundation course in Environment and Spirituality selected from:

RLST 240	Catholic Social Thought	3 hours
RLST 251	The Christian Tradition	3 hours

One foundation course in Environment and Justice selected from:

JUST 250	Introduction to Justice Studies	3 hours
GWS 240	Gender and Environmental Justice	3 hours
PHIL 254	Social Justice	3 hours

One foundation course in Environmental Ethics:

PHIL 256	Environmental Ethics	3 hours
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Two Advanced Courses in any suitable SJE topic. A 3-credit internship may be substituted for one advanced course. Courses selected from:

ENVS 331	Human Ecology and Spirituality	3 hours
JUST 301	The Quest for Human Rights	3 hours
PHIL 354	Ethics	3 hours
POSC 319	Politics of Global Economic Development	3 hours
RLST 351	Religion and Science	3 hours

Minor in Environmental Studies—ENVS (16 hours)**All of the following:**

ENVS 161	Introduction to Environmental Studies	3 hours
ENVS 171	Introduction to Environmental Science	3 hours
ENVS 395	Capstone Seminar	1 hour

Three of the following, drawn from at least two of the listed categories:*Category 1: Science*

BIO 308	Vertebrate Natural History	4 hours
BIO 109	Marine Biology	3-4 hours
BIO 312	Evolution	3 hours

BIO 316	Conservation Biology	4 hours
BIO 323	Ecology	4 hours
BIO 324	Field Botany	4 hours
BIO 332	Ornithology	3 hours
CHEM 102	Chemistry in Everyday Life	3 hours
MATH 107	Mathematics for Sustainability	3 hours
MATH 381	Mathematical Modeling	3 hours
PHYS 102	Intro Topics in Physics: 21st Century Energy	3 hours

Category 2: Policy, Ethics, Applications

ART 236	Sustainable Textiles	3 hours
EDUC 466	Communicating Climate Science	3 hours
ENVS 101	Sustainable Living	1 hour
and ENVS 203	Sustainability at Saint Mary's College & in the Holy Cross Charism	2 hours
GWS 240	Gender and Environmental Justice	3 hours
JUST 250	Introduction to Justice Studies	3 hours
NURS 414	Community Health Nursing	5 hours
PHIL 254	Social Justice	3 hours
POSC 326	Global Environmental Politics	3 hours
SOC 203	Social Problems (approved sections)	3 hours
SOC 306	Consumer Society	3 hours

Category 3: Human Ecology

ANTH 141	People and Nature	3 hours
ANTH 253	Survey I: Culture and Language	3 hours
ANTH 254	Survey II: Human Prehistory	3 hours
ANTH 392	Topical Seminar in Cultural Anthropology (approved topics)	3 hours
ANTH 394	Topical Seminar in Archaeology (approved topics)	3 hours
ENLT 206	Studies in Literature (approved topics)	3 hours
ENLT 211	Animals in Literature and Society	3 hours
ENLT 212	Ecopoetics in the Age of the Anthropocene	3 hours
ENVS 331	Human Ecology and Spirituality	3 hours
HUST 103	Lives and Times (approved topics)	3 hours

ENVIRONMENTAL STUDIES COURSES (ENVS)

101 Sustainable Living (1)

A practical course that offers an introduction to making sustainable life choices. Topics considered may include food, gardening, electronics, recycling, transportation, renewable energy, home energy efficiency, community-building, spirituality, and more.

161 Introduction to Environmental Studies (3)

An interdisciplinary course on the systemic interaction of human beings with their environments. It identifies interests informing environmental decisions and introduces practices of environmental advocacy.

171 Introduction to Environmental Science (3)

An interdisciplinary course that investigates the study of our environment from a scientific perspective. We will focus on principles of the nature of science, matter, energy, water, and life in terms of biology, chemistry, and geology.

203 Sustainability at Saint Mary's College and in the Holy Cross Charism (3)

This course will address sustainability in the context of the local academic community and its institutions. In light of the recent papal encyclical, *Laudato si, On Care for Our Common Home*, this course will provide students an opportunity to explore in an interdisciplinary way the challenges of sustainability and develop collaborative strategies for making our common campus homes more sustainable. This course will be offered concurrently at ND, SMC, and HCC, and will be co-taught by faculty from all three campuses. It will meet in rotation on each of the three campuses once per week

for two hours. Students will be invited to examine the course materials in conversation with the mission of the Congregation of Holy Cross through immersion at each of the campuses and encounters with the sisters, brothers, and priests of Holy Cross and with sustainability professionals.

217 Environmental Policy (3)

This course introduces the processes by which policy is made at local, state, national, and international levels of government with attention to the special challenges of creating sound environmental policy. It examines the strengths and weaknesses of policies currently in place and prepares students to intervene constructively in the formation of environmental policy.

331 Human Ecology and Spirituality (3)

An examination of the relationship of spirituality and ecology within several religious traditions. Particular attention is given to Christianity so that we may study at least one tradition in some depth. The course considers both how human spiritual experience is shaped by its context within particular ecosystems and how religious traditions shape humans' relation to the biosphere. Prerequisite: RLST 101. ENVS 161 or 171 highly recommended.

385 Interdisciplinary Environmental Research (3)

This course provides an introduction to a suite of important methods of analysis in environmental studies. Within a framework of interdisciplinary problem solving, students will learn to define questions for investigation, and they will gain experience using quantitative, qualitative, and textual research tools to address environmental issues. We will discuss the ethics and politics of research and strategies for using environmental research to support environmental advocacy and action. Prerequisite: ENVS 161, ENVS 171.

386 Current Issues in Environmental Studies (1)

This reading seminar surveys recent articles in the scholarly and popular presses on significant current environmental issues. Weekly readings for discussion are selected by faculty and by students. Discussions will analyze the methods and the rhetoric used in the articles in addition to examining the implications of the issues addressed and how interdisciplinary problem solving could be applied to each issue. Prerequisite: ENVS 161, ENVS 171.

395 Environmental Studies Capstone Seminar (1)

This capstone experience allows students to develop projects centered on a particular environmental issue of interest to the group. Prerequisite: Junior standing, ENVS 161, ENVS 171, and an additional course approved for the ENVS minor (may be taken concurrently).

495 Comprehensive Project Seminar (3)

A collaborative research seminar that provides structure for students' work on their comprehensive projects for Environmental Studies. Prerequisite: ENVS 385 and ENVS 386.