

# ENVIRONMENTAL SCIENCE: CONSERVATION AND RESTORATION ECOLOGY/ ENVIRONMENTAL SCIENCE AND SUSTAINABILITY (BS/ MS)

Biodiversity at local, regional, and global scales currently faces unprecedented threats from pressures including climate change, invasive species, and habitat alteration. Our conservation and restoration program prepares tomorrow's leaders to develop and implement effective strategies to protect and restore natural ecosystems. Students explore ecological principles, how humans interact with and impact ecosystems, and methods of repairing environmental damage.

With our Accelerated Bachelor's/Master's Program, Loyola SES students can boost their professional credentials and save time and money by completing an undergraduate degree along with a master of science in environmental science and sustainability degree in as little as five years. The economic and academic benefits are substantial.

## CURRICULUM

Students studying Conservation and Restoration develop a solid foundation in environmental science, environmental economics and policy, and the ways that society can effectively enhance biodiversity.

Code	Title	Hours
<b>Core Curriculum</b>		
ENVS 137	Foundations of Environmental Science I	3
BIOL 101	General Biology I	3
BIOL 111	General Biology I Lab	1
CHEM 160	Chemical Structure and Properties	3
CHEM 161	Chemical Structure and Properties Laboratory	1
BIOL 102	General Biology II	3
BIOL 112	General Biology II Lab	1
CHEM 180	Chemical Reactivity I	3
CHEM 181	Chemical Reactivity I Lab	1
ENVS 200	Environmental Careers and Professional Skills	1
ENVS 203	Environmental Statistics	3
ENVS 274	Chemistry of the Environment	3
ENVS 275	Chemistry of the Environment Lab	1
ENVS 280	Principles of Ecology	3
ENVS 286S	Principles of Ecology Lab	1
PLSC 392	Environmental Politics	3
ENVS 218	Biodiversity & Biogeography	3
ENVS 320	Conservation Biology	3
ENVS 321	Conservation Biology Lab	1
ENVS 330	Restoration Ecology	3
ENVS 331	Restoration Ecology Lab	1
ENVS 383	Human Dimensions of Conservation	3
<b>Justice and Ethics Choice</b>		

Select one of the following: 3

ENVS 284	Environmental Justice
PHIL 287	Environmental Ethics
THEO 204	Religious Ethics and the Ecological Crisis

### Economics Choice

ENVS 335	Ecological Economics	3
or ECON 328	Environmental Economics	

### Engaged Learning Choice

Select one of the following: 3

ENVS 226	Science & Conservation of Freshwater Ecosystems
ENVS 267	Bird Conservation and Ecology
ENVS 273	Energy and The Environment
ENVS 283	Environmental Sustainability
ENVS 340	Natural History of Belize
ENVS 345	Conservation and Sustainability of Neotropical Ecosystems
ENVS 350A	Solutions to Environmental Problems: Water
ENVS 350B	Solutions to Environmental Problems: Biogas
ENVS 350C	Solutions to Environmental Problems: Climate Action
ENVS 350F	Solutions to Environmental Problems: Food Systems
ENVS 391	Environmental Research
ENVS 395	Environmental Internship

### Capstone Choice

Select one of the following: 3

ENVS 390	Integrative Seminar
ENVS 391C	Independent Environmental Research (Capstone)
ENVS 395C	Environmental Internship (Capstone)

### Electives 9

See designated elective categories below

**Total Hours 69**

## BS Electives

Code	Title	Hours
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### Society, Ethics, and Justice

Select one of the following: 3

COMM 260	Environmental Journalism
ENVS 204	Gender, Health & Environment
ENVS 279 / HIST 279E	Climate and History
ENVS 284	Environmental Justice
ENVS 297 / HIST 297E	North American Environmental History
ENVS 298	Special Topics (with SES approval)
ENVS 338	Climate Change and Human Health
ENVS 350A	Solutions to Environmental Problems: Water
ENVS 350B	Solutions to Environmental Problems: Biogas
ENVS 350C	Solutions to Environmental Problems: Climate Action
ENVS 350F	Solutions to Environmental Problems: Food Systems
ENVS 383	Human Dimensions of Conservation

ENVS 391	Environmental Research (with SES approval)
ENVS 395	Environmental Internship (with SES approval)
ENVS 398	Special Topics (with SES approval)
ENVS 399	Directed Readings (with SES approval)
COMM 101	Public Speaking & Critical Thinking
COMM 277	Organizational Communication
COMM 306	Environmental Advocacy
COMM 322	Guerilla Media
COMM 379	Digital Sustainability
ENGL 288	Nature in Literature
PHIL 287	Environmental Ethics
PSYC 277	Environmental Psychology
SOCL 226	Science, Technology, & Society
SOCL 252	Global Inequalities
SOCL 272	Environmental Sociology
SOCL 276	The Sociology and Politics of Food
SOCL 278	Global Health
THEO 204	Religious Ethics and the Ecological Crisis
THEO 344	Theology and Ecology

**Policy, Economics, and Resource Management**

Select one of the following: 3

ENVS 298	Special Topics (with SES approval)
ENVS 300	Introduction to Public Health
ENVS 310	Introduction to Environmental Law & Policy
ENVS 311	Natural Resources and Land Use Law & Policy
ENVS 312	Water Law & Policy
ENVS 313	Energy Law & Policy
ENVS 327	Food Systems Analysis
ENVS 332	Industrial Ecology
ENVS 333	Introduction to the Circular Economy
ENVS 335	Ecological Economics
ENVS 336	Design for Circular & Sustainable Business
ENVS 338	Climate Change and Human Health
ENVS 363	Sustainable Business Management
ENVS 364	Sustainability Management in the Global Context
ENVS 383	Human Dimensions of Conservation
ENVS 384	Conservation Economics
ENVS 389	Ecological Risk Assessment
ENVS 391	Environmental Research (with SES approval)
ENVS 395	Environmental Internship (with SES approval)
ENVS 398	Special Topics (with SES approval)
ENVS 399	Directed Readings (with SES approval)
ECON 328	Environmental Economics
GLST 305	Globalization and Environmental Sustainability
MGMT 201	Managing People and Organizations
PLSC 354	Global Environmental Politics

**Environmental Science**

Select one of the following: 3

ENVS 207	Plants and Civilization
ENVS 215 / BIOL 215	Ornithology
ENVS 223	Soil Ecology

ENVS 224	Climate & Climate Change
ENVS 226	Science & Conservation of Freshwater Ecosystems
ENVS 267	Bird Conservation and Ecology
ENVS 273	Energy and The Environment
ENVS 283	Environmental Sustainability
ENVS 298	Special Topics (with SES approval)
ENVS 319	Winter Ecology
ENVS 322	Invasive Species
ENVS 325	Sustainable Agriculture
ENVS 326	Agroecosystems
ENVS 327	Food Systems Analysis
ENVS 340	Natural History of Belize
ENVS 345	Conservation and Sustainability of Neotropical Ecosystems
ENVS 350A	Solutions to Environmental Problems: Water
ENVS 350B	Solutions to Environmental Problems: Biogas
ENVS 350C	Solutions to Environmental Problems: Climate Action
ENVS 350F	Solutions to Environmental Problems: Food Systems
ENVS 369	Field Ornithology
ENVS 380	Introduction to Geographic Information Systems
ENVS 381	Advanced GIS Applications
ENVS 382	Remote Sensing
ENVS 385	Introduction to Global Health
ENVS 387	Principles of Ecotoxicology
ENVS 388	Applied Environmental Statistics
ENVS 389	Ecological Risk Assessment
ENVS 391	Environmental Research (with SES approval)
ENVS 395	Environmental Internship (with SES approval)
ENVS 398	Special Topics (with SES approval)
ENVS 399	Directed Readings (with SES approval)
ANTH 104	The Human Ecological Footprint
ANTH 303	People and Conservation
BIOL, CHEM, PHYS 300-level courses (with SES approval)	

**Total Hours** 9**Year 5**

The Environmental Science and Sustainability MS has the following requirements:

Code	Title	Hours
<b>Required Courses</b>		<b>6</b>
ENVS 401	Sustainable Systems - Natural Science Perspectives	
ENVS 402	Sustainable Systems - Social Science Perspectives	
<b>Completion of One of Four Concentrations:</b>		<b>9-12</b>
Environmental Law & Policy		
ENVS 410	Introduction to Environmental Law & Policy	
ENVS 411	Natural Resources and Land Use Law & Policy	
ENVS 412	Water Law & Policy	
ENVS 413	Energy Law & Policy	
Geographic Information Systems		
ENVS 480	Introduction to Geographic Information Systems	

ENVS 481	Advanced GIS Applications
ENVS 482	Remote Sensing
<b>Sustainable Assessment and Planning</b>	
ENVS 451	Introduction to Sustainability Concepts & Impacts
ENVS 452	Sustainability Assessment & Reporting I
ENVS 453	Sustainability Assessment & Reporting II
ENVS 454	Sustainability Plan Development & Reporting
<b>Sustainable Business</b>	
ENVS 433	Introduction to the Circular Economy
ENVS 435	Ecological Economics
ENVS 436	Design for Circular & Sustainable Business
ENVS 463	Sustainable Business Management
<b>Electives (for a total of 30 credit hours with required courses)</b>	<b>12-15</b>
<b>Natural Science and Quantitative Courses</b>	
	<b>6</b>
Students will take at least two courses from the following list of electives.	
ENVS 420	Conservation Biology
ENVS 422	Invasive Species
ENVS 425	Sustainable Agriculture
ENVS 426	Agroecosystems
ENVS 427	Food Systems Analysis
ENVS 430	Restoration Ecology
ENVS 435	Ecological Economics
ENVS 438	Climate Change and Human Health
ENVS 451	Introduction to Sustainability Concepts & Impacts
ENVS 452	Sustainability Assessment & Reporting I
ENVS 453	Sustainability Assessment & Reporting II
ENVS 480	Introduction to Geographic Information Systems
ENVS 481	Advanced GIS Applications
ENVS 482	Remote Sensing
ENVS 484	Conservation Economics
ENVS 487	Principles of Ecotoxicology
ENVS 488	Applied Environmental Statistics
ENVS 489	Ecological Risk Assessment
ENVS 491	Independent Environmental Research (upon approval)
ENVS 498	Special Topics (upon approval)
ENVS 498L	Special Topics with Lab (upon approval)
ENVS 499	Directed Readings (upon approval)
BIOL 495	Special Topics (Topic: Metagenomics)
BIOL 416	Limnology Lec/Lab
BIOL 418	Aquatic Insects Lecture & Laboratory
BIOL 470	Biostats & Exp Design Lec/Lab
MPBH 401	Environmental Health
MPBH 402	Public Health Practice and Management
MPBH 403	Introduction to Epidemiology
MPBH 404	Biostatistics for Health and Biological Science
MPBH 407	Public Health Policy: Concepts and Practice
MPBH 409	Biostatistics I
MPBH 412	Intro to Statistical Computing for Public Health
MPBH 414	Introduction to Global Health
MPBH 421	Biostatistics II

MPBH 423	Intermediate Epidemiology
MPP 401	Analytical Tools in Public Policy
MPP 402	Cost Benefit Analysis
MPP 403	Public Budget and Finance
MPP 405	Statistical Methods & Analysis for Public Policy I
MPP 406	Statistical Methods & Analysis Public Policy II
MPP 408	Political Feasibility Analysis
SOCL 414	Statistical Methods Analysis I
SOCL 415	Statistical Methods of Analysis II
STAT 403	SAS Program & Applied Statistics
STAT 407	Statistical Design
STAT 436	Topics in Biostatistics
<b>Sustainable Society and Business Courses</b>	
Student may choose from courses focused on society's interaction with the environment: environmental law and policy, sustainable business management, and fostering sustainable societies.	
ENVS 410	Introduction to Environmental Law & Policy
ENVS 411	Natural Resources and Land Use Law & Policy
ENVS 412	Water Law & Policy
ENVS 413	Energy Law & Policy
ENVS 432	Industrial Ecology
ENVS 433	Introduction to the Circular Economy
ENVS 436	Design for Circular & Sustainable Business
ENVS 454	Sustainability Plan Development & Reporting
ENVS 463	Sustainable Business Management
ENVS 464	Sustainability Management in the Global Context
ENVS 483	Human Dimensions of Conservation
ENVS 491	Independent Environmental Research (upon approval)
ENVS 498	Special Topics (upon approval)
ENVS 499	Directed Readings (upon approval)
MPBH 407	Public Health Policy: Concepts and Practice
MPP 400	Policy Design and Analysis
MPP 404	Public Policy Process
PSYC 460	Social Psychological Theory
PSYC 461	Attitude and Attitude Change
PSYC 486	Methods of Program Evaluation
SOCL 412	Qualitative Methods in Social Research
SOCL 446	Knowledge, Power & Expertise
SOCL 463	Sociology & Natural Environment

## School of Environmental Sustainability Graduation Requirements

All SES students are required to complete a foreign language requirement and a writing intensive requirement. The SES language requirement can be fulfilled by 1) earning college credit at the 102-level or above; or 2) demonstrating proficiency via the SES foreign language proficiency examination. The SES writing intensive requirement is fulfilled by successfully completing two Loyola WI courses (max of one per semester). Writing intensive courses have a "W" in the section number.

## **Additional Undergraduate Graduation Requirements**

All Undergraduate students are required to complete the University Core, at least one Engaged Learning course, and UNIV 101. SCPS students are not required to take UNIV 101. Nursing students in the Accelerated BSN program are not required to take core or UNIV 101. You can find more information in the University Requirements (<https://catalog.luc.edu/undergraduate/university-requirements/>) area.

## **SES Shared Learning Outcomes**

All SES majors share the following Program Learning Objectives, in addition to their unique major-specific Program Learning Objectives:

1. Articulate the foundational principles of natural and social sciences and humanities essential to solving environmental problems.
2. Critically evaluate the accuracy and credibility of information relating to environmental topics.
3. Employ knowledge and skills to design and implement solutions that contribute to a just and sustainable world.
4. Exemplify the values of environmental and social justice through actions to care for our common home and one another.