

# ENVIRONMENTAL ECONOMICS & SUSTAINABILITY: GOVERNANCE/ ENVIRONMENTAL SCIENCE AND SUSTAINABILITY (BA/ MS)

The BA Environmental Economics & Sustainability - Governance and the MS Environmental Science & Sustainability (MSESS) allows undergraduate students the opportunity to continue their graduate education while remaining within SES and Loyola.

## Related Programs

### Major

- Environmental Economics Sustainability: Governance (BA) (<https://catalog.luc.edu/undergraduate/environmental-sustainability/environmental-economics-sustainability/environmental-economics-sustainability-governance-ba/>)
- Environmental Economics Sustainability: Management (BA) (<https://catalog.luc.edu/undergraduate/environmental-sustainability/environmental-economics-sustainability/environmental-economics-sustainability-management-ba/>)

### Combined

- Environmental Economics Sustainability: Management/ Environmental Science and Sustainability (BA/MS) (<https://catalog.luc.edu/undergraduate/accelerated-bachelors-masters-program/environmental-economics-sustainability-management-environmental-science-sustainability-ba-ms/>)

## Curriculum

Code	Title	Hours
<b>BA Requirements</b>		
<i>Environmental Economics &amp; Sustainability: Governance Core</i>		
ECON 201	Principles of Microeconomics	3
ECON 202	Principles of Macroeconomics	3
ECON 303	Intermediate Microeconomics	3
ENVS 137	Foundations of Environmental Science I	3
ENVS 200	Environmental Careers and Professional Skills	1
ENVS 237	Foundations of Environmental Chemistry	3
ENVS 238	Foundations of Environmental Science Lab	1
ENVS 280	Principles of Ecology	3
ENVS 283	Environmental Sustainability	3
ENVS 284	Environmental Justice	3
or PHIL 287	Environmental Ethics	
or THEO 204	Religious Ethics and the Ecological Crisis	
ENVS 286	Principles of Ecology Lab	1
ENVS 335	Ecological Economics	3
MATH 130	Business Calculus	3-4
or MATH 131	Applied Calculus I	

or MATH 161	Calculus I	
PLSC 392	Environmental Politics	3
STAT 103	Fundamentals of Statistics	3
or ISSCM 241	Business Statistics	
or ENVS 203	Environmental Statistics	
<i>Governance Concentration Required Courses</i>		
ECON 328	Environmental Economics	3
ENVS 310	Introduction to Environmental Law & Policy	3
<i>Capstone Choice</i>		
ENVS 390	Integrative Seminar	3
or ENVS 391C	Independent Environmental Research (Capstone)	
or ENVS 395C	Environmental Internship (Capstone)	
Governance Concentration Electives (p. 1)		12
See designated elective categories below		

### MS Requirements

<i>Required Courses</i>		
ENVS 401	Sustainable Systems - Natural Science Perspectives	3
ENVS 402	Sustainable Systems - Social Science Perspectives	3
<i>Track Specific Curricula</i>		24
<i>Research Track Curriculum</i>		
<i>Electives</i>		

Students choose 12 credit hours of electives from either of the following in conjunction with their advisor:

Natural Science and Quantitative Electives; or (p. 2)

Sustainable Society and Business Electives (p. 3)

### Thesis Research

Students take 12 credit hours of research to design and conduct research thesis work under the guidance of a thesis advisor and thesis committee. Research track students are required to complete and defend their thesis to graduate.

ENVS 496 Research

ENVS 595 Thesis Supervision

### Professional Track Curriculum

Students choose from one of the following concentration areas: Environmental Law and Policy, Geographic Information Systems, Sustainable Assessment Planning, or Sustainable Business (p. 2)

### Electives

Students choose electives from either of the following lists in conjunction with their advisors to complete requirements:

Natural Science and Quantitative Electives; or (p. 2)

Sustainable Society and Business Electives (p. 3)

**Total Hours** **78-79**

Up to 12 credit hours taken at the 400 level may be shared between the undergraduate and graduate program. See the Suggested Sequence information below.

## BA Electives

Code	Title	Hours
<b>List A</b>		
Select two of the following:		6
ECON 320	Urban Economics	

ECON 325	Economics of Growth & Development	
ECON 329	Health Economics	
ECON 334	Economics of Government Expenditures & Taxation	
ECON 346	Econometrics	
<b>List B</b>		
Select two of the following:		6
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 384	Conservation Economics	
<b>Total Hours</b>		<b>12</b>

## MS Professional Track Curriculum Concentrations

### Environmental Law and Policy

This Concentration provides essential knowledge in relevant areas of environmental law and policy for professionals who want to better understand the role of government, industry, non-profit, and other institutions involved in environmental advocacy, consulting, and compliance.

Code	Title	Hours
ENVS 410	Introduction to Environmental Law & Policy	3
ENVS 411	Natural Resources and Land Use Law & Policy	3
ENVS 412	Water Law & Policy	3
ENVS 413	Energy Law & Policy	3
Natural Science and Quantitative Elective		3
Natural Science and Quantitative Elective		3
Environmental Elective		3
Environmental Elective		3
<b>Total Hours</b>		<b>24</b>

### Geographic Information Systems (GIS)

This Concentration provides essential knowledge on Geographic Information Systems (GIS) - a compilation of sophisticated, multidimensional software and tools used to capture, store, analyze, manage and present geospatial data. This curriculum provides essential training in the fundamental principles and concepts behind contemporary geographic mapping technology needed to solve complex geospatial problems commonly encountered in environmental sciences, urban planning, social sciences, public health, as well as business, engineering, and many more fields.

Code	Title	Hours
ENVS 480	Introduction to Geographic Information Systems	3
ENVS 481	Advanced GIS Applications	3
ENVS 482	Remote Sensing	3
Environmental Electives		15
<b>Total Hours</b>		<b>24</b>

### Sustainable Assessment & Planning

This Concentration delivers valuable skills for professionals who want to better understand how organizations can - and do - measure, regulate and report their own natural resource use. Students will develop essential skills used by sustainability professionals in government, industry, non-

profit, and other institutions striving to improve and document their sustainability impact.

Code	Title	Hours
ENVS 451	Introduction to Sustainability Concepts & Impacts	3
ENVS 452	Sustainability Assessment & Reporting I	3
ENVS 453	Sustainability Assessment & Reporting II	3
ENVS 454	Sustainability Plan Development & Reporting	3
Environmental Electives		12
<b>Total Hours</b>		<b>24</b>

### Sustainable Business

Code	Title	Hours
ENVS 433	Introduction to the Circular Economy	3
ENVS 435	Ecological Economics	3
ENVS 436	Design for Circular & Sustainable Business	3
ENVS 463	Sustainable Business Management	3
Natural Science and Quantitative Elective		3
Environmental Electives		9
<b>Total Hours</b>		<b>24</b>

## MS Natural Science and Quantitative Courses

Work with your advisor to choose from our many courses to best advance your individual interests.

Code	Title	Hours
BIOL 416	Limnology Lec/Lab	4
BIOL 418	Aquatic Insects Lecture & Laboratory	4
BIOL 470	Biostats & Exp Design Lec/Lab	4
BIOL 495	Special Topics	1-4
ENVS 420	Conservation Biology	3
ENVS 422	Invasive Species	3
ENVS 423	Environmental Microbiology	3
ENVS 425	Sustainable Agriculture	3
ENVS 426	Agroecosystems	3
ENVS 427	Food Systems Analysis	3
ENVS 430	Restoration Ecology	3
ENVS 435	Ecological Economics	3
ENVS 438	Climate Change and Human Health	3
ENVS 451	Introduction to Sustainability Concepts & Impacts	3
ENVS 452	Sustainability Assessment & Reporting I	3
ENVS 453	Sustainability Assessment & Reporting II	3
ENVS 454	Sustainability Plan Development & Reporting	3
ENVS 480	Introduction to Geographic Information Systems	3
ENVS 481	Advanced GIS Applications	3
ENVS 482	Remote Sensing	3
ENVS 484	Conservation Economics	3
ENVS 487	Principles of Ecotoxicology	3
ENVS 489	Ecological Risk Assessment	3
ENVS 491	Independent Environmental Research (upon approval)	1-4
ENVS 495	Environmental Internship	3
ENVS 498	Special Topics (upon approval)	1-12
ENVS 498L	Special Topics with Lab (upon approval)	1-4

ENVS 499	Directed Readings (upon approval)	1-3
MPBH 400	Determinants of Population Health	3
MPBH 401	Environmental Health	3
MPBH 403	Introduction to Epidemiology	3
MPBH 404	Biostatistics for Health and Biological Science	3
MPBH 407	Public Health Policy: Concepts and Practice	3
MPBH 409	Biostatistics I	3
MPBH 412	Intro to Statistical Computing for Public Health	1-3
MPBH 414	Introduction to Global Health	3
MPBH 421	Biostatistics II	3
MPBH 423	Intermediate Epidemiology	3
MPP 401	Analytical Tools in Public Policy	3
MPP 402	Cost Benefit Analysis	3
MPP 403	Public Budget and Finance	3
MPP 405	Statistical Methods & Analysis for Public Policy I	3
MPP 406	Statistical Methods & Analysis Public Policy II	3
MPP 408	Political Feasibility Analysis	3
SOCL 414	Statistical Methods Analysis I	3
SOCL 415	Statistical Methods of Analysis II	3
STAT 403	SAS Program & Applied Statistics	3
STAT 407	Statistical Design	3
STAT 436	Topics in Biostatistics	3

## MS Sustainable Society and Business Electives

Work with your advisor to choose from our many courses to best advance your individual interests.

Code	Title	Hours
ENVS 410	Introduction to Environmental Law & Policy	3
ENVS 411	Natural Resources and Land Use Law & Policy	3
ENVS 412	Water Law & Policy	3
ENVS 413	Energy Law & Policy	3
ENVS 433	Introduction to the Circular Economy	3
ENVS 436	Design for Circular & Sustainable Business	3
ENVS 454	Sustainability Plan Development & Reporting	3
ENVS 463	Sustainable Business Management	3
ENVS 483	Human Dimensions of Conservation	3
ENVS 491	Independent Environmental Research (upon approval)	1-4
ENVS 495	Environmental Internship	3
ENVS 498	Special Topics (upon approval)	1-12
ENVS 499	Directed Readings (upon approval)	1-3
MPBH 407	Public Health Policy: Concepts and Practice	3
MPP 400	Policy Design and Analysis	3
MPP 404	Public Policy Process	3
PSYC 460	Social Psychological Theory	3
PSYC 461	Attitude and Attitude Change	3
PSYC 486	Methods of Program Evaluation	3
SOCL 412	Qualitative Methods in Social Research	3
SOCL 446	Knowledge, Power & Expertise	3
SOCL 463	Sociology & Natural Environment	3

## Suggested Sequence of Courses

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
ENVS 137	Foundations of Environmental Science I	3
<b>Hours</b>		<b>3</b>
<b>Spring</b>		
ENVS 237	Foundations of Environmental Chemistry	3
ENVS 238	Foundations of Environmental Science Lab	1
ENVS 203	Environmental Statistics	3
or ISSCM 241	or Business Statistics	
or STAT 103	or Fundamentals of Statistics	
Justice and Ethics Choice		3
<b>Hours</b>		<b>10</b>
<b>Sophomore</b>		
<b>Fall</b>		
ECON 201	Principles of Microeconomics	3
ENVS 200	Environmental Careers and Professional Skills	1
ENVS 280	Principles of Ecology	3
ENVS 286	Principles of Ecology Lab	1
<b>Hours</b>		<b>8</b>
<b>Spring</b>		
ECON 202	Principles of Macroeconomics	3
<b>Hours</b>		<b>3</b>
<b>Junior</b>		
<b>Fall</b>		
ECON 328	Environmental Economics	3
ENVS 283	Environmental Sustainability	3
MATH 130	Business Calculus	3-4
or MATH 131	or Applied Calculus I	
or MATH 161	or Calculus I	
<b>Hours</b>		<b>9-10</b>
<b>Spring</b>		
ECON 303	Intermediate Microeconomics	3
PLSC 392	Environmental Politics	3
<b>Hours</b>		<b>6</b>
<b>Senior</b>		
<b>Fall</b>		
ENVS 410	Introduction to Environmental Law & Policy	3
ENVS 435	Ecological Economics	3
List A Elective		3
List B Elective (400-Level version)		3
<b>Hours</b>		<b>12</b>
<b>Spring</b>		
Capstone Choice		3
ENVS 401	Sustainable Systems - Natural Science Perspectives	3
List A Elective		3
List B Elective (400-Level course)		3
<b>Hours</b>		<b>12</b>

**Master's****Fall**

ENVS 402	Sustainable Systems - Social Science Perspectives	3
ENVS 400-Level Concentration Course		3
ENVS 400-Level Concentration Course		3
<b>Hours</b>		<b>9</b>

**Spring**

ENVS 400-Level Concentration Course		3
ENVS 400-Level Concentration Course		3
<b>Hours</b>		<b>6</b>
<b>Total Hours</b>		<b>78-79</b>

## Guidelines for Accelerated Bachelor's/Master's Programs

**Terms**

- Accelerated Bachelor's/Master's programs: In this type of program, students share limited credits between their undergraduate and graduate degrees to facilitate completion of both degrees.
- Shared credits: Graduate level credit hours taken during the undergraduate program and then applied towards graduate program requirements will be referred to as shared credits.

**Admission Requirements**

Accelerated Bachelor's/Master's programs are designed to enhance opportunities for advanced training for Loyola's undergraduates. Admission to these programs must be competitive and will depend upon a positive review of credentials by the program's admissions committee. Accordingly, the admission requirements for these programs may be higher than those required if the master's degree were pursued entirely after the receipt of a bachelor's degree. That is, programs may choose to have more stringent admissions requirements in addition to those minimal requirements below.

**Requirements:**

- Declared appropriate undergraduate major,
- By the time students begin taking graduate courses as an undergraduate, the student has completed approximately 90 credit hours, or the credit hours required in a program that is accredited by a specialty organization,<sup>1</sup>
- A minimum cumulative GPA for coursework at Loyola that is at or above the program-specific requirements, a minimum major GPA that is at or above the program-specific requirements, and/or appropriate designated coursework for evaluation of student readiness in their discipline.<sup>2</sup>

Students not eligible for the Accelerated Bachelor's/Master's program (e.g., students who have not declared the appropriate undergraduate major) may apply to the master's program through the regular admissions process. Students enrolled in an Accelerated Bachelor's/Master's program who choose not to continue to the master's degree program upon completion of the bachelor's degree will face no consequences.<sup>3</sup>

Ideally, a student will apply for admission (or confirm interest in proceeding towards the graduate degree in opt-out programs) as they approach 90 credit hours. Programs are encouraged to begin advising students early in their major so that they are aware of the program and, if interested, can complete their bachelor's degree requirements

in a way that facilitates completion of the program. Once admitted as an undergraduate, Program Directors should ensure that students are enrolled using the plan code associated with the Accelerated Bachelor's/Master's program. Using the plan code associated with the Accelerated Bachelor's/Master's program will ensure that students may be easily identified as they move through the program. Students will not officially matriculate into the master's degree program and be labeled as a graduate student by the university, with accompanying changes to tuition and Financial Aid (see below), until the undergraduate degree has been awarded. Once admitted to the graduate program, students must meet the academic standing requirements of their graduate program as they complete the program curriculum.

- <sup>1</sup> Programs that have specialized accreditation will adhere to the admissions criteria provided by, or approved by, their specialized accreditors.
- <sup>2</sup> The program will identify appropriate indicators of student readiness for graduate coursework (e.g., high-level performance in 300 level courses). Recognizing differences between how majors are designed, we do not specify a blanket requirement.
- <sup>3</sup> If students choose not to enroll in the Accelerated Bachelor's/Master's program, they still must complete all of the standard requirements associated with the undergraduate degree (e.g., a capstone).

For more information on Admissions requirements, visit here (<https://gpm.luc.edu/portal/admission/?tab=home>).

**Curriculum**

*Level and progression of courses.* The Accelerated Bachelor's/Master's programs are designed to be competitive and attractive to our most capable students. Students admitted to Accelerated Bachelor's/Master's programs should be capable of meeting graduate level learning outcomes. Following guidance from the Higher Learning Commission, only courses taken at the 400 level or higher (including 300/400 level courses taken at the 400 level) will count toward the graduate program.<sup>1,2</sup>

Up to 50% of the total graduate level credit hours, required in the graduate program, may come from 300/400 level courses where the student is enrolled in the 400 level of the course. Further, at least 50% of the credit hours for the graduate program must come from courses that are designed for and restricted to graduate students who have been admitted to a graduate program at Loyola (e.g., enrolled in plan code that indicates the Accelerated Bachelor's/Master's program, typically ending with the letter "D").<sup>3</sup>

In general, graduate level coursework should not be taken prior to admission into the Accelerated Bachelor's/Master's program. Exceptions may be granted for professional programs where curriculum for the Accelerated Bachelor's/Master's program is designed to begin earlier. On the recommendation of the program's Graduate Director, students may take one of their graduate level courses before they are admitted to the Accelerated Bachelors/Master's program if they have advanced abilities in their discipline and course offerings warrant such an exception.<sup>4</sup> Undergraduate degree requirements outside of the major are in no way impacted by admission to an Accelerated Bachelor's/Master's program.<sup>5</sup>

*Shared credits.* Undergraduate courses (i.e., courses offered at the 300 level or below) cannot be counted as shared credits nor count towards the master's degree. Up to 50% of the total graduate level credit hours, required in the graduate program, may be counted in meeting both the undergraduate and graduate degree requirements. Of those shared credits, students in an Accelerated Bachelor's/Master's program should begin their graduate program with the standard introductory course(s)

for the program whenever possible. So that students may progress through the Accelerated Bachelor's/Master's program in a timely manner, undergraduate programs are encouraged to design their curriculum such that a student can complete some required graduate credit hours while completing the undergraduate degree. For instance, some of the graduate curriculum should also satisfy electives for the undergraduate major.

The program's Graduate Director will designate credit hours to be shared through the advising form and master's degree conferral review process. Shared credit hours will not be marked on the undergraduate record as having a special status in the undergraduate program. They will be included in the student's undergraduate earned hours and GPA. Graduate credit hours taken during the undergraduate program will not be included in the graduate GPA calculation.

- <sup>1</sup> If students wish to transfer credits from another university to Loyola University Chicago, the program's Graduate director will review the relevant syllabus(es) to determine whether it meets the criteria for a 400 level course or higher.
- <sup>2</sup> Programs with specialized accreditation requirements that allow programs to offer graduate curriculum to undergraduate students will conform to those specialized accreditation requirements.
- <sup>3</sup> In rare cases, the Graduate Director may authorize enrollment in a 400-level course for a highly qualified and highly motivated undergraduate, ensuring that the undergraduate's exceptional participation in the graduate class will not diminish in any way the experience of the graduate students regularly enrolled.
- <sup>4</sup> For example, if a particular course is only offered once every 2-3 years, and a student has demonstrated the necessary ability to be successful, the Graduate Director may allow a student to take a graduate level course to be shared prior to the student being formally admitted to the graduate program. See, also, footnote 3.
- <sup>5</sup> Students should not, for example, attempt to negotiate themselves out of a writing intensive requirement on the basis of admission to a graduate program.

## Graduation

Degrees are awarded sequentially. All details of undergraduate commencement are handled in the ordinary way as for all students in the School/College/Institute. Once in the graduate program, students abide by the graduation deadlines set forth by the graduate program. Students in these programs must be continuously enrolled from undergraduate to graduate degree program unless given explicit permission by their program for a gap year or approved leave of absence. In offering the option of an Accelerated Bachelor's/Master's program, the university is making possible the acceleration of a student's graduate degree completion. It should be understood that students may not request deferral of their matriculation into the Master's degree program. If students would like to delay their graduate studies after earning the undergraduate degree, they may apply for admission to the traditional master's degree program. Any application of graduate credit earned while in the undergraduate program is subject to the policies of the graduate degree granting school.

## Learning Outcomes

- Explain the interconnections between human development, the economy, and the environment. [BA]
- Understand how economic theory and analysis can be used to evaluate social and economic outcomes. [BA]

- Describe how policy affects business and economic activity to achieve human development and environmental sustainability goals. [BA]
- Analyze how policy interventions can shift an economy to achieve a balance of ecological and socioeconomic objectives. [BA]
- Deepen your understanding of complex socio-ecological systems and their connection with sustainable development goals. [MS]
- Increase your ability to make accurate and ethical evidence-based decisions from scientific literature. [MS]
- Expand your capacity to communicate environmental science and sustainability issues to the scientific community, professional colleagues, policy makers, and the general public. [MS]
- Demonstrate competence of in-depth knowledge and skills through completion of an original research project and thesis. [MS]