

# ENVIRONMENTAL SCIENCE: FOOD SYSTEMS AND SUSTAINABLE AGRICULTURE/ ENVIRONMENTAL SCIENCE AND SUSTAINABILITY (BS/ MS)

Our environmental science degree program in food systems and sustainable agriculture answers the growing call to evaluate and redesign our food and farming systems. This program prepares students to develop innovative, sustainable food production and distribution approaches that protect the environment and improve access to healthy food. Students learn in the classroom and through hands-on projects in the community, developing the skills to make a difference for people and the natural world.

## CURRICULUM

Students studying Food Systems & Sustainable Agriculture build upon a solid foundation of environmental science, gain experience in designing and managing agricultural ecosystems, develop quantitative skills in evaluating ecosystem processes and services, and practice making management and policy recommendations based on available data.

Code	Title	Hours
<b>BS Requirements</b>		
<i>Core Curriculum</i>		
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 207	Plants and Civilization	3
ENVS 223	Soil Ecology	3
ENVS 325	Sustainable Agriculture	3
Select one of the following:		3
ENVS 320	Conservation Biology	
ENVS 326	Agroecosystems	
ENVS 327	Food Systems Analysis	

ENVS 350F	Solutions to Environmental Problems: Food Systems	
<i>Justice and Ethics Choice</i>		
Select one of the following:		3
ENVS 284	Environmental Justice	
PHIL 287	Environmental Ethics	
THEO 204	Religious Ethics and the Ecological Crisis	
<i>Economics Choice</i>		
ENVS 335	Ecological Economics	3
or ECON 328	Environmental Economics	
<i>Engaged Learning Choice</i>		
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 369	Field Ornithology	
ENVS 391	Environmental Research	
ENVS 395	Environmental Internship	
<i>Capstone Choice</i>		
Select one of the following:		3
ENVS 390	Integrative Seminar	
ENVS 391C	Independent Environmental Research (Capstone)	
ENVS 395C	Environmental Internship (Capstone)	
<i>Electives</i>		21
See designated elective categories below		
<b>MS Requirements</b>		
<i>Required Courses</i>		
ENVS 401	Sustainable Systems - Natural Science Perspectives	3
ENVS 402	Sustainable Systems - Social Science Perspectives	3
Choose One of Four Concentrations <sup>1</sup>		9-12
<i>Environmental Law &amp; Policy</i>		
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	
<i>Geographic Information Systems</i>		
ENVS 480	Introduction to Geographic Information Systems	
ENVS 481	Advanced GIS Applications	
ENVS 482	Remote Sensing	
<i>Sustainable Assessment and Planning</i>		
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	
Sustainable Business		
ENVS 433	Introduction to the Circular Economy	
ENVS 435	Ecological Economics	
ENVS 436	Design for Circular & Sustainable Business	
ENVS 463	Sustainable Business Management	
<i>MS Electives</i>		<i>12-15</i>
<b>Total Hours</b>		<b>109</b>

<sup>1</sup> Students choosing the Geographical Information Systems track must take an additional elective course to meet a total credit hours for the MS.

## BS Electives

Code	Title	Hours
<b>Society, Ethics, and Justice</b>		
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	
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	
<b>Policy, Economics, and Resource Management</b>		

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 351	Introduction to Sustainability Concepts & Impacts	
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	
COMM 379	Digital Sustainability	
GLST 305	Globalization and Environmental Sustainability	
MGMT 201	Managing People and Organizations	
PLSC 354	Global Environmental Politics	

<b>Environmental Electives</b>		
Select one of the following:		3
ENVS 204	Gender, Health & Environment	
ENVS 218	Biodiversity & Biogeography	
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 300	Introduction to Public Health	
ENVS 301	Environmental Health	
ENVS 303	Introduction to Epidemiology	
ENVS 319	Winter Ecology	
ENVS 320	Conservation Biology (if not used above)	
ENVS 322	Invasive Species	
ENVS 323	Environmental Microbiology	3
ENVS 326	Agroecosystems (if not used above)	
ENVS 327	Food Systems Analysis (if not used above)	
ENVS 330	Restoration Ecology	
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 383	Human Dimensions of Conservation
ENVS 384	Conservation Economics
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)	
<b>Total Hours</b>	<b>12</b>

## MS Electives

Code	Title	Hours
<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	

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

## Sustainable Society and Business Courses

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

## Suggested Sequence of Courses

### Suggested Sequence of Courses - Research Track

Course	Title	Hours
<b>Year One</b>		
<b>Fall</b>		
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
ENVS 137	Foundations of Environmental Science I	3
<b>Hours</b>		<b>11</b>
<b>Spring</b>		
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
<b>Hours</b>		<b>12</b>
<b>Year Two</b>		
<b>Fall</b>		
ENVS 280	Principles of Ecology	3
ENVS 286S	Principles of Ecology Lab	1
<b>Hours</b>		<b>4</b>
<b>Spring</b>		
ENVS 274	Chemistry of the Environment	3
ENVS 275	Chemistry of the Environment Lab	1
Justice & Ethics Choice		3
<b>Hours</b>		<b>7</b>
<b>Year Three</b>		
<b>Fall</b>		
ENVS 207 or ENVS 223	Plants and Civilization or Soil Ecology	3
ENVS 335 or ECON 328	Ecological Economics or Environmental Economics	3
<b>Hours</b>		<b>6</b>
<b>Spring</b>		
ENVS 207 or ENVS 223	Plants and Civilization or Soil Ecology	3
<b>Hours</b>		<b>3</b>
<b>Year Four</b>		
<b>Fall</b>		
PLSC 392	Environmental Politics	3
Engaged Learning Choice		3
ENVS 402	Sustainable Systems - Social Science Perspectives	3
ENVS 425	Sustainable Agriculture	3
<b>Hours</b>		<b>12</b>
<b>Spring</b>		
Capstone Choice		3
Society, Ethics, & Justice Choice		3

ENVS 401	Sustainable Systems - Natural Science Perspectives	3
ENVS 420 or ENVS 426 or ENVS 427	Conservation Biology or Agroecosystems or Food Systems Analysis	3
<b>Hours</b>		<b>12</b>
<b>Year Five</b>		
<b>Fall</b>		
ENVS 496	Research	3-12
400 Level Environmental Science Elective		3
400 Level Environmental Science Elective		3
<b>Hours</b>		<b>9</b>
<b>Spring</b>		
ENVS 496	Research	3-12
400 Level Environmental Science Elective		3
400 Level Environmental Science Elective		3
<b>Hours</b>		<b>9-18</b>
<b>Total Hours</b>		<b>85-94</b>

### Suggested Sequence of Courses - Professional Track

Course	Title	Hours
<b>Year One</b>		
<b>Fall</b>		
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
ENVS 137	Foundations of Environmental Science I	3
<b>Hours</b>		<b>11</b>
<b>Spring</b>		
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
<b>Hours</b>		<b>12</b>
<b>Year Two</b>		
<b>Fall</b>		
ENVS 280	Principles of Ecology	3
ENVS 286S	Principles of Ecology Lab	1
<b>Hours</b>		<b>4</b>
<b>Spring</b>		
ENVS 274	Chemistry of the Environment	3
ENVS 275	Chemistry of the Environment Lab	1
Justice & Ethics Choice		3
<b>Hours</b>		<b>7</b>
<b>Year Three</b>		
<b>Fall</b>		
ENVS 207 or ENVS 223	Plants and Civilization or Soil Ecology	3

ENVS 335 or ECON 328	Ecological Economics or Environmental Economics	3
<b>Hours</b>		<b>6</b>
<b>Spring</b>		
ENVS 207 or ENVS 223	Plants and Civilization or Soil Ecology	3
<b>Hours</b>		<b>3</b>
<b>Year Four</b>		
<b>Fall</b>		
PLSC 392	Environmental Politics	3
Engaged Learning Choice		3
ENVS 425	Sustainable Agriculture	3
400 Level Environmental Science Elective		3
<b>Hours</b>		<b>12</b>
<b>Spring</b>		
Capstone Choice		3
Society, Ethics, & Justice Choice		3
ENVS 420 or ENVS 426 or ENVS 427	Conservation Biology or Agroecosystems or Food Systems Analysis	3
400 Level Environmental Science Elective		3
<b>Hours</b>		<b>12</b>
<b>Year Five</b>		
<b>Fall</b>		
ENVS 496	Research	3-12
400 Level Required Concentration Course		3
400 Level Required Concentration Course		3
<b>Hours</b>		<b>9</b>
<b>Spring</b>		
ENVS 402	Sustainable Systems - Social Science Perspectives	3
400 Level Required Concentration Course		3
400 Level Required Concentration Course		3
<b>Hours</b>		<b>9</b>
<b>Total Hours</b>		<b>85</b>

- **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.

## 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.

## 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.



<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://gpem.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.

## LEARNING OUTCOMES

1. Explain the components of food systems and their complex interactions across spatial and temporal scales. [BS]
2. Articulate the physical, psychological, cultural, and spiritual significance of food to individual and community wellbeing. [BS]
3. Using multiple methods of analysis, evaluate the environmental and equity impacts of different food system practices to reveal points of leverage for social-ecological change. [BS]
4. Engage knowledge, skills, and values through experiences that advance sustainability, resilience, and justice within food systems. [BS]
5. Deepen your understanding of complex socio-ecological systems and their connection with sustainable development goals. [MS]
6. Increase your ability to make accurate and ethical evidence-based decisions from scientific literature. [MS]
7. Expand your capacity to communicate environmental science and sustainability issues to the scientific community, professional colleagues, policy makers, and the general public. [MS]
8. Demonstrate competence of in-depth knowledge and skills through completion of an original research project and thesis. [MS]

## 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.