

ENVIRONMENTAL SUSTAINABILITY: SCIENCE OF THE EARTH SYSTEM, BSLAS

for the degree of Bachelor Science in Liberal Arts and Sciences in
Environmental Sustainability, Science of the Earth System Concentration

The Science of the Earth System concentration provides a rigorous exploration of the physical and biological processes that shape our planet. The concentration allows specialization in physical sciences, biological sciences, or information science that are connected to the environment. field methods, remote sensing, and Geographic Information Science (GIS). Graduates of the program prepared for professional roles or graduate study in sustainability consulting, environmental science, engineering, and related fields.

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Graduation Requirements

Minimum hours required for graduation: 120 hours.

Minimum required major and supporting course work: Normally equates to 47-56 hours. Twelve hours of 300- and 400-level courses in the major must be taken from this campus. Substitutions may be made with advisor approval.

University Requirements

The university and residency requirements can be found in the Student Code (<https://studentcode.illinois.edu/article3/part8/3-801/>) (§ 3-801) and in the Academic Catalog (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (<https://courses.illinois.edu/gened/DEFAULT/DEFAULT/>). Some Gen Ed requirements may be met by courses required and/or electives in the program.

Code	Title	Hours
	Composition I	4-6
	Advanced Composition	3
	Humanities & the Arts (6 hours)	6
	Natural Sciences & Technology (6 hours)	6
	fulfilled by CHEM 102 or CHEM 202 and GEOL 107 or IB 150	
	Social & Behavioral Sciences (6 hours)	6
	Cultural Studies: Non-Western Cultures (1 course)	3
	Cultural Studies: US Minority Cultures (1 course)	3
	Cultural Studies: Western/Comparative Cultures (1 course)	3
	Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)	6-10

fulfilled by STAT 100, MATH 220 or MATH 221 and PHYS 101 or PHYS 211

Language Requirement (Completion of the fourth semester or equivalent of a language other than English is required) 0-20

Orientation and Professional Development

Code	Title	Hours
LAS 101	Design Your First Year Experience	1
OR		
LAS 100 & LAS 101	Success in LAS for International Students and Design Your First Year Experience	3
OR		
LAS 102	Transfer Advantage	1

Major Requirements

Code	Title	Hours
ESE coursework		10
ESE 200	Earth Systems	3
ENSU 300	Environmental Sustainability	3
ESE 379	Introduction to Geographic Information Systems	4

Advanced Courses 18-24

A minimum of six 300- and 400-level courses (from the lists below), totaling at least 18 credit hours, and in an academically coherent program approved by the advisor, are required. At least three of these six advanced courses must be listed or cross-listed as an ESE or ENSU course.

Capstone and Experiential

ESE 389	Environment and Sustainability Field Expedition	3
ESE 401	ESE Capstone	3
ESE 497	Special Topics in ESE	1 to 4

Earth's Biosphere & Ecology

ESE 439	Biogeography	3
HORT 430	Children and Nature	2
IB 362	Marine Biology	3
IB 411	Bioinspiration	3
IB 440	Plants and Global Change	3
IB 444	Insect Ecology	3
IB 451	Conservation Biology	4
IB 452	Ecosystem Ecology	3
IB 453	Community Ecology	3
IB 461	Ornithology	4
NRES 348	Fish and Wildlife Ecology	3
NRES 419	Env and Plant Ecosystems	3
NRES 420	Restoration Ecology	4

Earth's Physical Systems, Resources, & Hazards

ABE 436	Renewable Energy Systems	3
ATMS 420	Atmospheric Chemistry	4
CEE 330	Environmental Engineering	3
CHEM 360	Chemistry of the Environment	3
ENSU 302	Air Pollution to Global Change	3
ESE 320	Water Planet, Water Crisis	3

ESE 333	Earth Materials and the Env	4	NPRE 480	Energy and Security	3
ESE 411	Geomorphology	4	NRES 325	Natural Resource Policy Mgmt	3
ESE 445	Earth Resources Sustainability	3	NRES 439	Env and Sustainable Dev	3
ESE 470	Introduction to Hydrogeology	4	UP 446	Sustainable Planning Seminar	4
ESE 486	Environmental Consulting	3	UP 456	Sustainable Planning Workshop	4
GEOL 380	Environmental Geology	4	UP 480	Sustainable Design Principles	2
GEOL 450	Investigating the Earth's Interior	3	Visualizing the Earth System		
GEOL 451	Environmental Geophysics	4	ATMS 305	Computing and Data Analysis	3
GEOL 460	Geochemistry	3	ESE 380	Geographic Information Systems II	4
GGIS 401	Watershed Hydrology	3	ESE 421	Earth Systems Modeling	4
GGIS 406	Fluvial Geomorphology	4	GGIS 371	Spatial Analysis	4
GGIS 408	Humans and River Systems	4	GGIS 407	CyberGIS & Geospatial Data Science	4
MSE 489	Matl Select for Sustainability	3	GGIS 412	Geospatial Technologies & Society	3
NRES 351	Introduction to Environmental Chemistry	3	GGIS 460	Aerial Photo Analysis	3
Environment & the Human Response			GGIS 476	Environmental Remote Sensing	3
AGCM 330	Environmental Communications	3	GGIS 477	Introduction to Remote Sensing	3
HK 408	Environmental Health	3	GGIS 479	Advanced Topics in GIS	4
ENGL 476	Topics in Literature and the Environment	3	NRES 427	Modeling Natural Resources	4
ENSU 301	Soc Impacts Weather & Climate	3	NRES 454	GIS in Natural Resource Mgmt	4
ESE 311	Environmental Issues Today	3	Science of the Earth System Concentration Requirements		
ESE 360	Environmental Writing	3	Cognate Course Work		19-22
ESE 467	Multimedia Environmental Communications	3	CHEM 102	General Chemistry I	3
ESE 477	Advanced Environmental Writing	3	or CHEM 202	Accelerated Chemistry I	
ESE 498	Environmental Writing for Publication	3	CHEM 103	General Chemistry Lab I	1
GGIS 350	Sustainability and the City	3	or CHEM 203	Accelerated Chemistry Lab I	
GGIS 384	Population Geography	3	MATH 220	Calculus	5
GGIS 495	Advanced Topics in Geography	3 or 4	or MATH 221	Calculus I	
GGIS 496	Climate & Social Vulnerability	3	STAT 100	Statistics	3
LA 430	Children and Nature	2	PHYS 101	College Physics: Mech & Heat	5
LA 450	Ecology for Land Restoration	4	or PHYS 211	University Physics: Mechanics	
NRES 340	Environ Social Sci Res Meth	3	GEOL 107	Physical Geology	4
NRES 472	Environmental Psychology	4	or IB 150	Organismal & Evolutionary Biol	
SOC 447	Environmental Sociology	3	<i>for the degree of Bachelor Science in Liberal Arts and Sciences in Environmental Sustainability, Science of the Earth System Concentration</i>		
Sustainability, Policy, and Global Change			<hr/>		
ACE 310	Natural Resource Economics	3	<i>This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.</i>		
ACE 406	Environmental Law	3	<i>Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. For more information, see the corresponding section on the Degree and General Education Requirements page (http://catalog.illinois.edu/general-information/degree-general-education-requirements/).</i>		
ACE 411	Environment and Development	3	First Year		
ATMS 307	Climate Processes	3	First Semester		Hours
ATMS 447	Climate Change Assessment	3	LAS 101		1
ATMS 449	Biogeochemical Cycles	4	ESE 200		3
CPSC 336	Tomorrow's Environment	3			
CPSC 415	Bioenergy Crops	3			
CPSC 431	Plants and Global Change	3			
ENSU 303	Sustainable Business I	4			
ENSU 310	Renewable & Alternative Energy	4			
ENSU 410	Sustainable Organizations	4			
ESE 410	Green Development	4			
ESE 465	Transportation & Sustainability	3			
ESE 466	Environmental Policy	3			
ESE 482	Challenges of Sustainability	3			
ETMA 311	Humanity in the Food Web	3			

Language Other Than English (3rd level)	4
Composition I or General Education course	4
General Education course	3
Total Hours	15

Total Hours 15

First Year

Second Semester	Hours
CHEM 102	3
General Education course or Composition I	3
CHEM 103	1
Language Other Than English (4th level)	4
Free Elective course	3
Total Hours	14

Total Hours 14

Second Year

First Semester	Hours
IB 150	4
MATH 220	5
Free Elective course	3
Free Elective course	3
Total Hours	15

Total Hours 15

Second Year

Second Semester	Hours
STAT 100	3
ENSU 300	3
General Education course	3
General Education course	3
Free Elective course	3
Total Hours	15

Total Hours 15

Third Year

First Semester	Hours
ESE 379	4
Advanced ESE or ENSU course	3
PHYS 101	5
Free Elective course	3
Total Hours	15

Total Hours 15

Third Year

Second Semester	Hours
Advanced ESE or ENSU course	3
General Education course	3
General Education course	3
Free Elective course	3

Free Elective course	3
Total Hours	15

Total Hours 15

Fourth Year

First Semester	Hours
Advanced ESE or ENSU course	4
Advanced course from list	3
General Education course	3
Free Elective course	3
Free Elective course	3
Total Hours	16

Total Hours 16

Fourth Year

Second Semester	Hours
Advanced course from list	3
Advanced course from list	3
General Education course	3
Free Elective course	3
Free Elective course	3
Total Hours	15

Total Hours 15

Total Hours: 120

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1. Be able to recognize, critique and implement commonly accepted Sustainability models and ideas in a wide variety of settings, using systems thinking to link social and natural science concepts.
2. Have a fundamental understanding of the underlying natural science; being able to recognize and apply appropriate scientific methods.
3. Use quantitative methods to describe, understand and evaluate theoretical and applied issues in environmental and sustainability study; this includes direct calculation, working with data, and using quantitative models.
4. Be able to critically evaluate and then communicate environmental and sustainability concepts to both specialized and wide audiences.
5. Students will demonstrate professional competence in environmental and sustainability practice by executing appropriate laboratory and field techniques, applying Geographic Information Science tools and software, and selecting and employing suitable quantitative and qualitative analytical methods.

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