The major in Earth, Society, and Environmental Sustainability (ESE) offers a unique, multidisciplinary program in the College of Liberal Arts and Sciences (LAS). Students will learn about the interconnectedness of environmental, economic, and social systems of the world; the implications of our actions on the environment; factors that determine the sustainability of human institutions, organizations, cultures, and technologies; finding solutions through innovative approaches; and expanding future options by practicing environmental stewardship. Following the classical definition of sustainability, the aim is to develop citizens, businesses, and societies that meet the needs of the present without compromising the ability of future generations to do the same.

Required introductory coursework provide breadth in the essential natural and social sciences needed for interdisciplinary environmental sustainability study. The major offers two concentrations within which majors gain content expertise: Science of the Earth System, and Society and the Environment. Depth of knowledge is achieved by requiring a minimum of five advanced classes in a coherent field of study.

The major is available to both on-campus and off-campus students. On-campus students need only be eligible to be in LAS to transfer to the degree. The program is also designed so that students with an associates (or equivalent) degree, or who have sufficient previous coursework, can transfer to the University and complete a Bachelor of Science degree entirely off-campus. Students interested in completing coursework, can transfer to the University and complete a Bachelor of Science degree entirely off-campus. Students interested in completing the course off-campus, but have less than 60 hours of coursework, should consult with the program advisor.

The degree will prepare students for a variety of career paths in either the private or the public sector, as well as for graduate study. The interdisciplinary background in both scientific and human aspects of environmental problems will prepare students for a variety of positions with businesses, state and federal regulatory agencies, research institutions, consulting firms and nongovernmental education and advocacy organizations. The major also provides a platform for entry into institutions, consulting firms and nongovernmental education and advocacy organizations. The major also provides a platform for entry into institutions, consulting firms and nongovernmental education and advocacy organizations.

For the Degree of Bachelor Science in Liberal Arts and Sciences

Major in Earth, Society, and Environmental Sustainability

E-mail: sese-info@illinois.edu

Students select one concentration in consultation with an academic advisor:

- Society and the Environment (SAE) Concentration (http://catalog.illinois.edu/undergraduate/las/academic-units/earth-system-environ/society-environment-concentration)
- Science of the Earth System (SES) Concentration (http://catalog.illinois.edu/undergraduate/las/academic-units/earth-system-environ/science-earth-system-concentration)

On-campus UIUC students can transfer to this degree without any special requirements.

Off-campus students who plan to transfer to this degree should have completed, or have in progress, the following:

- the Composition 1 requirement.
- the third level of high school foreign language or second level of college foreign language.

It is highly recommended that off-campus students complete the following requirements before transferring to the online degree - students who have not completed the following requirements may have to take additional coursework (either at UIUC or elsewhere) and should consult the program advisor:

- the UIUC LAS language requirement should be satisfied.
- the General Education Distribution Requirements of the College of Liberal Arts and Sciences should be completed.
- the Cognate Coursework should be completed.

## Minor in Earth, Society, and Environment

The ESE minor is designed for students who desire to obtain a background in topics related to environmental studies, in order to support study and practice of their major field. A minimum of 18 hours is required.

For more information and a list of approved courses visit: www.earth.illinois.edu. (http://www.earth.illinois.edu)

Questions may be addressed to Jonathan Tomkin, tomkin@illinois.edu.

### Code Title Hours

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory course from the Earth’s Physical Systems, Resources, and Hazards Area course list</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Introductory course from either the Environment and the Human Response or Sustainability, Policy, and Global Change Area course lists</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>ESE 200 Earth Systems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Three Advanced Courses from a list maintained by the minor advisor, at least two of which must be listed or cross listed as ESE courses</td>
<td>9-12</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours 18-23

ENSU Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/ENSU)

## Environmental Sustainability Courses

ENSU 300 Environmental Sustainability credit: 3 Hours. Same as LA 370 and NRES 370. See LA 370.
ENVS 301  Soc Impacts Weather & Climate  credit: 3 Hours.
Same as ATMS 322. See ATMS 322.
This course satisfies the General Education Criteria for:
Social Beh Sci - Soc Sci

ENVS 302  Air Pollution to Global Change  credit: 3 Hours.
Same as ATMS 323. See ATMS 323.

ENVS 303  Sustainable Business I  credit: 4 Hours.
At the dawn of the 21st century, business and society is confronted with a
confluence of factors, including environmental degradation, widespread
poverty, and the need for renewable sources of energy. The diverse
sources of information that point to an uncertain future suggests that
a 'business as usual' approach has to be replaced with more proactive
alternatives that address the needs of the environment, consumer
welfare and community development. This course on sustainable
marketing management begins to address these issues and engender
an appreciation among our students for the challenges that lie ahead
for businesses. Looks at the relationship between sustainable business
practices, societal welfare, and ecological systems. Student projects will
apply marketing and business concepts to create a sustainable business
plan for organizations.

ENVS 310  Renewable & Alternative Energy  credit: 4 Hours.
Fossil fuel supplies are finite and growing energy demands of an ever
increasing population will quickly deplete these reservoirs. Focuses on
the use and availability of renewable and alternative energy sources such
as wind, solar, bio-fuels, ethanol, geothermal and nuclear power as well as
the impacts of using these alternative energy sources on climate, society
and the global economy. Students will develop the student’s perspective
on human energy consumption at all scales through a complete scale
analysis of energy production and consumption – from the individual to
the national government to the world economy.

ENVS 410  Sustainable Organizations  credit: 4 Hours.
Explores the notion of sustainability as a core business tenant, and how
entrepreneurs and their companies are working to create and capture
financial, social, and environmental value. The focus is on on large, for
profit companies, but lessons will extend to smaller, non-profit, and
governmental organizations. The aim is to prepare participants for the
green challenge of adopting and implementing socially responsible
practices in the workplace. 4 undergraduate hours. 4 graduate hours.

ENVS Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/ENV)

Environmental Studies Courses

ENVS 101  Introduction to Energy Sources  credit: 3 Hours.
Same as NPRE 101. See NPRE 101.
This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences
Quantitative Reasoning II

ENVS 210  Environmental Economics  credit: 3 Hours.
Same as ACE 210, ECON 210, NRES 210, and UP 210. See ACE 210.
This course satisfies the General Education Criteria for:
Social Beh Sci - Soc Sci

ENVS 220  Communicating Agriculture  credit: 3 Hours.
Same as AGCM 220 and NRES 220. See AGCM 220.
This course satisfies the General Education Criteria for:
Advanced Composition

ENVS 299  Ind Studies of Env. Topics  credit: 0 to 4 Hours.
Approved for letter and S/U grading. Prerequisite: Consent of instructor.

ENVS 301  Tools for Sustainability  credit: 3 Hours.
Develops systems-thinking skills needed to make connections between
different disciplines to better understand problems and trade-offs related
to sustainability. Students will gain competence in conducting cost-
benefit and life-cycle analyses and learn about sustainability metrics
while improving their ability to communicate about the integrated
dimensions of sustainability within an interdisciplinary setting.
Prerequisite: For students enrolled in the Sustainability, Energy and
Environment Fellows Program.

ENVS 310  Natural Resource Economics  credit: 3 Hours.
Same as ACE 310, and NRES 310. See ACE 310.

ENVS 330  Environmental Communications  credit: 3 Hours.
Same as AGCM 330 and NRES 330. See AGCM 330.

ENVS 336  Tomorrow's Environment  credit: 3 Hours.
Same as CHLH 336 and CPSC 336. See CPSC 336.

ENVS 380  Environmental Geology  credit: 4 Hours.
Same as GEOL 380. See GEOL 380.

ENVS 406  Urban Ecology  credit: 4 Hours.
Same as UP 406. See UP 406.

ENVS 420  Conservation Biology  credit: 4 Hours.
Same as CPSC 436 and IB 451. See IB 451.

ENVS 430  Comm in Env Social Movements  credit: 3 Hours.
Same as AGCM 430 and NRES 430. See AGCM 430.

ENVS 431  Environ Toxicology & Health  credit: 3 Hours.
Same as CHLH 461 and IB 485. See IB 485.

ENVS 433  Pesticide Toxicology  credit: 3 or 4 Hours.
Same as CB 434 and IB 486. See IB 486.

ENVS 447  Environmental Sociology  credit: 3 or 4 Hours.
Same as RSOC 447 and SOC 447. See SOC 447.

ENVS 469  Environmental Health  credit: 3 or 4 Hours.
Same as CHLH 469. See CHLH 469.

ENVS 474  Principles of Epidemiology  credit: 4 Hours.
Same as CHLH 474 and PATH 474. See CHLH 474.

ENVS 480  Basic Toxicology  credit: 3 Hours.
Same as CB 449, CPSC 433 and FSHN 480. See FSHN 480.

ENVS 491  Sustainability Experience  credit: 1 to 4 Hours.
Students will work with faculty, staff, and/or the Student Sustainability
Committee to advance campus sustainability goals and the Illinois
Climate Action Plan. This course is designed to enable students to
apply their disciplinary knowledge to tackle inherently interdisciplinary
problems, while also developing and enhancing their critical analysis,
leadership, organizational, and project management/evaluation skills
and preparing them for addressing sustainability issues in their careers.
1 to 4 undergraduate hours. 1 to 4 graduate hours. Approved for letter
and S/U grading. May be repeated, if topics vary. Prerequisite: Consent of instructor.

Information listed in this catalog is current as of 04/2018
ENVS 492  Sustainability, Energy and Environment Capstone  credit: 4 Hours.
Problem-focused learning and a holistic and interdisciplinary perspective to address critical sustainability-related challenges facing society. Students will gain critical thinking skills to examine the sustainability of various decisions, analyze the trade-offs between the economic, environmental and social dimensions of sustainability of alternative solutions, learn techniques to operationalize the concept of sustainability and develop practical skills in sustainability assessment. Team projects will develop team building skills, communication skills and project management skills. 4 undergraduate hours. No graduate credit. Prerequisite: ENVS 301. For students enrolled in the Sustainability, Energy and Environment Fellows Program.

ESE Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/ESE)

Earth, Society, Environment Courses
ESE 103  Earth's Physical Systems  credit: 4 Hours.
Same as GEOG 103. See GEOG 103. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences

ESE 104  Geology of the National Parks  credit: 3 Hours.
Same as GEOL 104. See GEOL 104. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences

ESE 106  Geographies of Globalization  credit: 3 Hours.
Same as GEOG 106. See GEOG 106. This course satisfies the General Education Criteria for:
Cultural Studies - Non-West Social Beh Sci - Soc Sci

ESE 111  Emergence of Life  credit: 3 Hours.
Same as GEOL 111. See GEOL 111. This course satisfies the General Education Criteria for:
Nat Sci Tech - Life Sciences

ESE 117  The Oceans  credit: 3 Hours.
Same as GEOL 117. See GEOL 117. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences

ESE 118  Natural Disasters  credit: 3 Hours.
Same as GEOL 118 and GLBL 118. See GEOL 118. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences

ESE 120  Severe and Hazardous Weather  credit: 3 Hours.
Same as ATMS 120. See ATMS 120. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences Quantitative Reasoning II

ESE 140  Climate and Global Change  credit: 3 Hours.
Same as ATMS 140. See ATMS 140. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences

ESE 143  History of Life  credit: 3 Hours.
Same as GEOL 143. See GEOL 143. This course satisfies the General Education Criteria for:
Nat Sci Tech - Life Sciences

ESE 170  Nature Religion  credit: 3 Hours.
Same as REL 170. See REL 170.

ESE 199  Undergraduate Open Seminar  credit: 1 to 5 Hours. Special topics in Earth, Society, and the Environment; content is variable. May be repeated if topics vary.

ESE 200  Earth Systems  credit: 3 Hours. Interdisciplinary lecture class intended to introduce Earth Systems studies, which focuses on integrating social and natural science approaches to studying the Earth and its environments.

ESE 202  American Environmental History  credit: 3 Hours. Same as HIST 202 and NRES 202. See HIST 202. This course satisfies the General Education Criteria for:
Humanities - Hist Phil Cultural Studies - Western

ESE 208  History of the Earth System  credit: 4 Hours. Same as GEOL 208. See GEOL 208. This course satisfies the General Education Criteria for:
Nat Sci Tech - Phys Sciences

ESE 210  Social & Environmental Issues  credit: 3 Hours. Same as GEOG 210. See GEOG 210. This course satisfies the General Education Criteria for:
Social Beh Sci - Soc Sci

ESE 215  Resource Conflicts  credit: 3 Hours. Same as GEOG 215 and GLBL 215. See GEOG 215. This course satisfies the General Education Criteria for:
Social Beh Sci - Soc Sci

ESE 222  Big Rivers of the World  credit: 3 Hours. Same as GEOG 222. See GEOG 222.

ESE 254  American People, Places, & Environments  credit: 3 Hours. Same as GEOG 254. See GEOG 254. This course satisfies the General Education Criteria for:

ESE 278  Environment and Society  credit: 3 Hours. Same as GEOG 278, NRES 278 and PS 273. See NRES 278. This course satisfies the General Education Criteria for:

ESE 289  Environment & Sustainability Field Study  credit: 1 Hour. Group expedition to study environment and sustainability issues at a nearby field site. Includes in-class meetings, student-led presentation, and a field trip that may be short as part of a day or as long as several days. Field trip and field trip fee required. Additional fees may apply. See Class Schedule. Approved for letter and S/U grading. May be repeated in separate terms if topics vary. Prerequisite: For ESE majors, minors, and Sustainability Living Learning Community students. Non majors can apply to the waitlist.

ESE 293  The Anthropocene  credit: 3 Hours. Same as ENGL 293. See ENGL 293.

ESE 311  Environmental Issues Today  credit: 3 Hours. Seminar exposing students in the Environmental Fellows Program to different disciplinary perspectives on specific environmental issues, as revealed in the scholarly literature. Specific problems will vary from term to term. This seminar helps students make the transition from disciplinary to interdisciplinary thinking. Team-taught. Same as ATMS 311. Prerequisite: Admission to Environmental Fellows Program or consent of advisor.
ESE 320 Water Planet, Water Crisis credit: 3 Hours. Study of the science of water on planet earth, the developing water crisis, and some possible solutions to it. Topics include water’s unique physical and chemical properties; how it profoundly shapes the earth/ocean/atmosphere system; dynamics of oceans, atmosphere, lakes, rivers, groundwater, and ice masses; current fresh water supplies and their distribution on earth relative to population; current and future water crises and the compounding effects of droughts, floods, and global change; and prospects for some technological and economic approaches to easing the crisis. Same as GEOL 370 and GEOL 370.

ESE 333 Earth Materials and the Env credit: 4 Hours. Same as GEOL 333. See GEOL 333.

ESE 350 Sustainability and the City credit: 3 Hours. Same as GEOL 350. See GEOL 350.

ESE 360 Environmental Writing credit: 3 Hours. Equips students to write about the environment for various audiences, with a focus on specific current efforts to promote sustainability on the Urbana-Champaign campus. We will practice technical techniques for each stage of the writing process—from defining topics, to gathering information, to crafting active, engaging prose. Readings will include models of effective environmental writing and "how to" pieces by experts. Research will include visits to campus sites and student-conducted interviews with subjects. Same as ENGL 360. Prerequisite: Completion of campus Composition I general education requirement. This course satisfies the General Education Criteria for: Advanced Composition

ESE 379 Intro to GIS Systems credit: 4 Hours. Same as GEOG 379. See GEOG 379.

ESE 380 GIS II: Spatial Prob Solving credit: 4 Hours. Same as GEOL 380. See GEOL 380. This course satisfies the General Education Criteria for: Quantitative Reasoning II

ESE 381 Environmental Perspectives credit: 3 Hours. Same as GEOL 381. See GEOL 381.

ESE 386 Arctic Environmt & Society credit: 6 Hours. Same as GLBL 386 and SCAN 386. See GLBL 386.

ESE 389 Environment and Sustainability Field Expedition credit: 3 Hours. Group expedition to study environment and sustainability issues at a field site. Includes in-class meetings, student-led presentation, and field trip; expeditions run during spring break, winter break, in mid-May or in intercession; dates depend on location. Field Trip and field trip fee required. Additional fees may apply. See Class Schedule. May be repeated up to 12 hours in separate terms if topics vary.

ESE 401 ESE Capstone credit: 3 Hours. Capstone experience for majors in Earth, Society, and Environment Sustainability. 3 undergraduate hours. No graduate credit. Approved for Letter and S/U grading.

ESE 410 Green Development credit: 4 Hours. Same as GEOG 410. See GEOG 410.

ESE 411 Geomorphology credit: 4 Hours. Same as GEOG 411. See GEOG 411.

ESE 421 Earth Systems Modeling credit: 4 Hours. Same as ATMS 421, GEOG 421, GEOL 481 and NRES 422. See ATMS 421.

ESE 439 Biogeography credit: 3 Hours. Same as ANTH 436, GEOG 436, IB 439, and NRES 441. See IB 439.

ESE 445 Earth Resources Sustainability credit: 3 Hours. Introduces the physical (energy, mineral, and soil) resources of the Earth, the environmental consequences of producing and using resources, the controls on resource supplies, and the alternatives to traditional supplies. Focuses on the geological origin and context of resources, the means of exploration and production, the history of production, and sustainability issues related to consumption and depletion. Provides an understanding of why resources can be scarce and expensive, why many are not renewable, and why their use impacts the Earth System. May include field trips. 3 undergraduate hours. 3 graduate hours. Credit is not given for both ESE 445 and GEOL 380. Prerequisite: Junior standing or higher.

ESE 452 Ecosystem Ecology credit: 3 Hours. Same as IB 452 and NRES 462. See IB 452.

ESE 462 Ecological Criticism credit: 3 or 4 Hours. Same as CWL 460 and REL 462. See REL 462.

ESE 465 Transportation & Sustainability credit: 3 or 4 Hours. Same as GEOG 465. See GEOG 465. This course satisfies the General Education Criteria for: Advanced Composition

ESE 466 Environmental Policy credit: 3 or 4 Hours. Same as GEOL 466. See GEOL 466.

ESE 470 Introduction to Hydrogeology credit: 4 Hours. Same as ENGL 470. See ENGL 470.

ESE 477 Advanced Environmental Writing credit: 3 Hours. Same as ENGL 477. See ENGL 477. This course satisfies the General Education Criteria for: Advanced Composition

ESE 481 Intl Environ Cooperation credit: 3 Hours. Same as GEOG 481. See GEOG 481.

ESE 482 Challenges of Sustainability credit: 3 Hours. An interdisciplinary approach to investigating the meaning and practice of sustainability in the contemporary Earth system. As a consequence, students explore the sustainability of crucial resources - water, soil, energy, mineral and the biota - in the context of the social and environmental systems in which these resources are used, including the moral, physical, ecological, political and economic. Same as GEOG 482 and GEOL 483. 3 undergraduate hours. 3 graduate hours. Prerequisite: Junior or senior standing, or consent of instructor.

ESE 486 Environmental Consulting credit: 3 Hours. Survey of the fundamental science and US policy underpinning the practices of environmental consultancy. Environmental consulting is an interdisciplinary field drawing together engineers, geologists, environmental scientists, biologists, chemists, lawyers, social workers, social scientists, lobbyists and analysts. This course describes the myriad of pathways into environmental consulting and prepares students with the fundamental policy and science concepts. Subjects covered are the framework of environmental policy, chemicals of concern and their properties, environmental site assessment, site remediation, land use and ecosystem restoration as well as indoor environmental concerns. Same as GEOL 486. 3 undergraduate hours. 3 graduate hours.
ESE 497  Special Topics in ESE  credit: 1 to 4 Hours.
Advanced topics course, consisting of seminar or lectures in subjects not covered by regular course offerings; for advanced undergraduates and graduate students. Possible field study in a prominent geological locality; includes in-class meetings, student-led presentations, and field trip; trips run during spring break, winter break, in mid-end May; dates depend on location. Additional fees may apply. See Class Schedule. 1 to 4 undergraduate hours. 1 to 4 graduate hours. Approved for letter and S/U grading. May be repeated in the same or separate terms to a maximum of 12 undergraduate hours or 8 graduate hours. Prerequisite: Consent of instructor.

ESE 498  Environmental Writing for Publication  credit: 3 Hours.
Provides students with both the experience of the real-world editorial process and with a research product (the published essay) that showcases their professional development as well-informed and persuasive writers on environmental issues. Same as ENGL 498. 3 undergraduate hours. No graduate credit. Prerequisite: Consent of instructor.