

# Earth and Environmental Sciences, BA

Earth and environmental sciences majors study the planet's geologic materials, water, air, and biota with an emphasis on local and global interactions between these spheres in the present and over deep time. Students examine planetary evolution, including Earth's interior and landform processes, life and ecosystems, and the complex interactions between Earth systems over time and space. The program also emphasizes human interactions with Earth's water, air, and biota, and the present and future outcomes of those modifications. The integrated biological, chemical, physical, and geological components of the BA program offer students flexibility and exposure to the entire geoscience and environmental discipline while at the university, but with fewer supporting science and math requirements and more electives than the BS program.

The BA in earth and environmental science is intended for students who are interested in the fundamentals of geology or earth science and is most applicable as a second degree to students pursuing allied sciences, such as the School of Earth, Environment, and Sustainability's environmental policy and planning or geographic and sustainability sciences majors, or an associated degree in the colleges of Education and Liberal Arts and Sciences, or another unit.

## Learning Outcomes

Graduates will:

- understand planetary and ecosystem processes across diverse spatial and temporal scales;
- understand past and present interactions within the Earth-life system, including human interactions and interventions;
- develop the ability to collect and interpret environmental field data within a focused subdiscipline of earth and environmental sciences; and
- develop an analytical skill set to integrate the diverse array of earth sciences and related disciplines.

## Requirements

The Bachelor of Arts with a major in earth and environmental sciences requires a minimum of 120 s.h., including at least 55 s.h. of work for the major. Students must maintain a grade-point average of at least 2.00 in all courses for the major and in all UI courses for the major. They must also complete the College of Liberal Arts and Sciences GE CLAS Core. Transfer students must complete a minimum of 15 s.h. of School of Earth, Environment, and Sustainability coursework in the major.

The BA with a major in earth and environmental sciences requires the following coursework.

Requirements	Hours
Foundation Courses	40
Electives	15

## Foundation Courses

Course #	Title	Hours
All of these:		
SEES:1050	Introduction to Geology	4
SEES:1070	Contemporary Environmental Issues	3
SEES:1085	Fundamentals of Environmental Science	4
SEES:2010	Interdisciplinary Environmental Seminar	1
SEES:2050	Foundations of GIS	4
SEES:2673/ BIOL:2673	Ecology	3
SEES:3020	Earth Surface Processes	3
BIOL:1411	Foundations of Biology	4
BIOL:1412	Diversity of Form and Function	4
CHEM:1110	Principles of Chemistry I	4
STAT:2010	Statistical Methods and Computing	3
	or STAT:3510/ IGPI:3510	Biostatistics
One of these:		
SEES:2310	Introduction to Climatology	3
SEES:3320	Earth's Climate System	3

## Electives

Students must complete at least 15 s.h. in courses from at least two elective categories. Elective categories and their corresponding courses can be found in the BS in earth and environmental sciences section of the catalog.

## Combined Programs

### BA/MAT

Students interested in pursuing a graduate degree in teaching may apply to the combined Bachelor of Arts/Master of Arts in Teaching with a science education subprogram offered by the College of Liberal Arts and Sciences and the College of Education. The combined program enables students to earn a BA in geoscience and an MAT in five years by beginning to earn graduate credit during their fourth year of undergraduate study and by counting up to 19 s.h. of qualifying credit toward both degrees. For more information, see Science Education in the Master of Arts in Teaching (College of Education) section of the catalog. Interested students should consult an advisor.

## Honors

Graduating with departmental honors and graduating with university honors are two opportunities available to high-achieving undergraduate students, each with specific and distinct requirements. Some students pursue both options while others pursue one or the other.

## Honors in the Major

Within the College of Liberal Arts and Sciences, each major develops its own requirements to achieve honors in the major. In order to graduate with honors in the major, students in the School of Earth, Environment, and Sustainability (SEES) pursue study beyond the typical undergraduate level. They

work under the direction of a faculty member to conduct original research and then prepare and present a written honors thesis based on their work.

Potential honors students must complete an honors thesis contract with their advisor and obtain approval from the department's undergraduate committee by the first semester of their senior year or earlier. They are also required to register for SEES:4995 Honors Thesis as they work to complete their thesis, where they must earn a grade of B or higher. Additionally, SEES honors students must maintain a cumulative grade-point average of at least 3.33 in all University of Iowa and SEES coursework.

## University of Iowa Honors Program

In addition to honors in the major, students have opportunities for honors study and activities through membership in the University of Iowa Honors Program. Visit Honors at Iowa to learn about the university's honors program.

Membership in the UI Honors Program is not required to earn honors in the earth and environmental sciences major.

### Career Advancement

Graduates with degrees in earth and environmental sciences find jobs and careers with a variety of public, private, and nonprofit organizations with roles ranging from research to outreach. Completing the minimum requirements for this degree may not adequately prepare a student for an entry-level professional job in geology or the environmental sciences.

Possible careers include, but are not limited to environmental science consultant, state or U.S. Geological Survey scientist, state regulatory agency scientist, Environmental Protection Agency scientist, National Resource Conservation Service scientist, academic researcher (requires graduate school), environmental education teacher, K-12 education teacher, land manager or steward, museum curator, natural hazard assessment and mitigation scientist or manager, renewable energy scientist or manager, science writer and communication specialist, National Park Service guide, resource exploration and extraction scientist, nature facility scientist and program manager, and restoration designer and manager.

### Academic Plans

## Sample Plans

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

## Earth and Environmental Sciences, BA

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
GE CLAS Core: Sustainability <sup>a</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
CHEM:1110	Principles of Chemistry I <sup>b</sup>	4

SEES:1085	Fundamentals of Environmental Science <sup>b</sup>	4
ENGL:1200 or RHET:1030	The Interpretation of Literature or Rhetoric: Writing and Communication	3 - 4
GE CLAS Core: Social Sciences <sup>c</sup>		3
CSI:1600	Success at Iowa	1

**Hours 15-16**

### Spring

SEES:1050	Introduction to Geology <sup>b</sup>	4
SEES:1070	Contemporary Environmental Issues <sup>b</sup>	3
RHET:1030 or ENGL:1200	Rhetoric: Writing and Communication or The Interpretation of Literature	3 - 4
GE CLAS Core: Understanding Cultural Perspectives <sup>c</sup>		3

Elective course <sup>d</sup> 3

**Hours 16-17**

### Second Year

#### Fall

BIOL:1411	Foundations of Biology <sup>b</sup>	4
SEES:2010	Interdisciplinary Environmental Seminar	1
Major: earth and environmental sciences elective course <sup>e</sup>		3 - 4
GE CLAS Core: World Languages First Level Proficiency or elective course <sup>f</sup>		4 - 5
Elective course <sup>d</sup>		3

**Hours 15-17**

#### Spring

BIOL:1412	Diversity of Form and Function <sup>b</sup>	4
Major: earth and environmental sciences elective course <sup>e</sup>		3 - 4
GE CLAS Core: World Languages Second Level Proficiency or elective course <sup>f</sup>		4 - 5
Elective course <sup>d</sup>		3

**Hours 14-16**

### Third Year

#### Fall

SEES:2050	Foundations of GIS	4
SEES:3020	Earth Surface Processes	3
GE CLAS Core: Literary, Visual, and Performing Arts <sup>c</sup>		3
GE CLAS Core: World Languages Third Level Proficiency or elective course <sup>f</sup>		4 - 5
Elective course <sup>d</sup>		2

**Hours 16-17**

#### Spring

SEES:2310 or SEES:3320	Introduction to Climatology or Earth's Climate System	3
SEES:2673	Ecology	3
GE CLAS Core: Values and Society <sup>c</sup>		3
GE CLAS Core: World Languages Fourth Level Proficiency or elective course <sup>f</sup>		4 - 5
Elective course <sup>d</sup>		3

**Hours 16-17**

**Fourth Year****Fall**

STAT:2010 or STAT:3510	Statistical Methods and Computing <sup>g</sup> or Biostatistics	3
Major: earth and environmental sciences elective course <sup>e</sup>		3 - 4
GE CLAS Core: Historical Perspectives <sup>c</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>15-16</b>

**Spring**

Major: earth and environmental sciences elective course <sup>e</sup>		3 - 4
Major: earth and environmental sciences elective course <sup>e</sup>		3 - 4
GE CLAS Core: Quantitative or Formal Reasoning or elective course <sup>d, h</sup>		3
Elective course <sup>d</sup>		3
Elective course <sup>d</sup>		3
Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) <sup>i</sup>		
<b>Hours</b>		<b>15-17</b>
<b>Total Hours</b>		<b>122-133</b>

should apply for a degree for the session in which all requirements will be met. For any questions on appropriate timing, contact your academic advisor or Degree Services.

- a Sustainability must be completed by choosing a course that has been approved for Sustainability AND for one of these General Education areas: Natural Sciences; Quantitative or Formal Reasoning; Social Sciences; Historical Perspectives; International and Global Issues; Literary, Visual, and Performing Arts; or Values and Society.
- b Fulfills a major requirement and may fulfill a GE requirement.
- c GE CLAS Core courses may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses.
- d Students may use elective courses to earn credit towards the total s.h. required for graduation or to complete a double major, minors, or certificates.
- e Students must complete at least 15 s.h. in courses from at least two elective categories. Elective categories and their corresponding courses can be found in the BS in earth and environmental sciences section of the General Catalog.
- f Students who have completed four levels of a single language or two levels of two different languages in high school or college have satisfied the GE CLAS Core World Languages requirement. Students who have completed three levels of a single language may complete a fourth-level course in the same language or may choose an approved World Language and Cultural Exploration course. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course. Contact your academic advisor or CLAS Undergraduate Programs Office with questions concerning the World Languages requirement.
- g STAT:2010 satisfies both the GE CLAS Core Quantitative or Formal Reasoning requirement and the statistics foundation course requirement for the major.
- h Students who completed STAT:2010 have already satisfied the GE CLAS Core Quantitative or Formal Reasoning requirement.
- i Please see Academic Calendar, on Office of the Registrar website, for current degree application deadlines. Students