

# ENVIRONMENTAL SCIENCE, B.S.

The environmental science program at Saint Louis University focuses on developing a scientific understanding of Earth's natural systems and their interconnections with human society. The program represents a collaborative effort between several departments to provide a degree opportunity that bridges traditional academic boundaries. It is hosted by the Department of Earth and Atmospheric Sciences, which provides student advising and mentoring.

Environmental science encompasses the study of Earth's environment, which is comprised of the geosphere, hydrosphere, atmosphere and biosphere, with emphasis on human interactions with these spheres. Students will learn how these spheres interact with each other in the natural world, how human activities influence the environment and how people are affected by the ever-changing environment. The environmental science program is designed so students first gain a thorough foundation of knowledge in all spheres and then focus on one or more sub-disciplines, for example: soil, water, energy or climate change. The breadth-plus-depth structure of the program prepares students for advanced study toward M.S. or Ph.D. programs in scientific disciplines, professional schools such as law or public health, or for immediate employment in industry or government.

## Curriculum Overview

The environmental science curriculum is built upon a breadth-plus-depth model that combines a comprehensive background in the natural sciences with specialized training in a chosen area of interest. All students entering the environmental science program are required to complete a core set of preparatory and skill development courses that provide a rigorous introduction to the environmental sciences.

Students then choose a specialized track that provides more advanced instruction in a specific discipline germane to environmental science. The track requirements are individually defined by the collaborative departments and are roughly equivalent to completing a minor in the specific area of interest. All students must also complete an internship or a capstone project.

Although students in the program will take many of their upper-division classes in other departments, all students within the program have full access to departmental resources, including excellent computer and research laboratories, field- and laboratory-based research opportunities with department faculty, departmental field trips, and internship opportunities in the St. Louis area. Opportunities for research and field experiences in biology and chemistry are also available to qualified students.

## Fieldwork and Research Opportunities

Weekend field trips, canoe trips and social events are scheduled throughout the year. One perk associated with this major is the opportunity to join other faculty and students on annual, weeklong field trips across the country. Visit environmentally important sites and get to know the faculty, other students and alumni who join the trips.

Undergraduate students in the environmental science program have the option to pursue internship opportunities through the host department or in collaboration with other departments on campus. Students also have the option to participate in a capstone project designed to provide a

real-world perspective as part of their undergraduate training. In addition, students may choose to participate in faculty research projects, many of which include funding specifically to support the participation of undergraduate students.

## Careers

Demand for graduates with a comprehensive knowledge of natural systems and their interactions is strong and projected to increase in the face of greater public awareness of the influence of humans on the natural environment. With judicious planning, the program serves as excellent preparation for graduate degrees in medicine, the sciences, law and other disciplines where a strong background in environmental science is desirable.

## Admission Requirements

### Begin Your Application (<http://www.slu.edu/apply.php>)

Saint Louis University also accepts the Common Application.

### Freshman

All applications are thoroughly reviewed with the highest degree of individual care and consideration to all credentials that are submitted. Solid academic performance in college preparatory coursework is a primary concern in reviewing a freshman applicant's file.

To be considered for admission to any Saint Louis University undergraduate program, applicants must be graduating from an accredited high school, have an acceptable HiSET exam score or take the General Education Development (GED) test.

### Transfer

Applicants must be a graduate of an accredited high school or have an acceptable score on the GED.

Students who have attempted fewer than 24 semester credits (or 30 quarter credits) of college credit must follow the above freshmen admission requirements. Students who have completed 24 or more semester credits (or 30 quarter credits) of college credit must submit transcripts from all previously attended college(s).

In reviewing a transfer applicant's file, the Office of Admission holistically examines the student's academic performance in college-level coursework as an indicator of the student's ability to meet the academic rigors of Saint Louis University. Where applicable, transfer students will be evaluated on any courses outlined in the continuation standards of their preferred major.

## International Applicants

All admission policies and requirements for domestic students apply to international students along with the following:

- Demonstrate English Language Proficiency
- Proof of financial support must include:
  - A letter of financial support from the person(s) or sponsoring agency funding the time at Saint Louis University
  - A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of study at the University
- Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include the courses taken and/or lectures attended, practical laboratory work, the maximum and minimum grades attainable, the

grades earned or the results of all end-of-term examinations, and any honors or degrees received. WES and ECE transcripts are accepted.

## Scholarships and Financial Aid

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Scholarships are awarded based on academic achievement, service, leadership and financial need.
- **Financial Aid:** Financial aid is provided in the form of grants and loans, some of which require repayment.

For priority consideration for merit-based scholarships, apply for admission by Dec. 1 and complete a Free Application for Federal Student Aid (FAFSA) by March 1.

For information on other scholarships and financial aid, visit the student financial services office online at <https://www.slu.edu/financial-aid> (<https://www.slu.edu/financial-aid/>).

## Learning Outcomes

1. Graduates will know the founding principles in their field of study, as well as the facts and content appropriate to the field.
2. Graduates will be able to use their knowledge to reason about issues in their discipline.
3. Graduates will be able to solve quantitative problems in their discipline.

## Requirements

Environmental science students must complete a minimum total of **74 credits** for the major.

Code	Title	Credits
<b>Core Requirement</b>		
College core requirements (p. 3)		54-63
For additional information about core courses		
<b>Required Courses</b>		
EAS 1420 & EAS 1425	Introduction to Atmospheric Science and Introduction to Atmospheric Science Lab	4
EAS 1430 & EAS 1435	Introduction to the Solid Earth and Introduction to the Solid Earth Lab	4
EAS 1450 & EAS 1455	Introduction to Oceanography and Intro to Oceanography Lab	4
EAS 2400	Field Techniques in the Geosciences	3
EAS 2450	Communicating in Science	3
EAS 2480 & EAS 2485	Foundations of Environmental Science and Foundations of Environmental Science Lab	4
EAS 3100	Environmental Issues	3
EAS 4140	Soil Science	3
EAS 4410 & EAS 4415	Hydrology and Hydrology Lab	4
BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory	4
BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4

CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
STAT 1300 or MATH 1300 or STAT 3850	Elementary Statistics with Computers Elementary Statistics with Computers Foundation of Statistics	3
MATH 1510	Calculus I	4
PHYS 1310 & PHYS 1320	College Physics I and College Physics I Laboratory	4

Or

PHYS 1610 & PHYS 1620	University Physics I and University Physics I Laboratory	
GIS 4010	Introduction to Geographic Information Systems	3

### Elective Courses

Select a minimum of 12 credits from the following: \*

EAS 2440	Atmospheric Processes	
EAS 2530	Climate and Climate Change	
EAS 4030	Elements of Air Pollution	
EAS 4100 & EAS 4105	Surface Processes and Surface Processes Laboratory	
EAS 4280	Environmental Geochemistry	
EAS 4580	Karst Hydrology	
EAS 4910	Internship	
GIS 4090	Introduction to Programming for GIS and Remote Sensing	
CVNG 3040 & CVNG 3041	Sustainability and Environmental Engineering and Sustainability and Environmental Engineering Lab	
CVNG 4370	River Engineering	
CVNG 4250	Water Treatment Processes	
BIOL 3010	Evolutionary Biology	
BIOL 4480	Conservation Biology	
BIOL 4750	General Ecology	
<i>No more than one combination from the following:</i>		
CHEM 2200 & CHEM 2205	Analytical Chemistry 1 and Analytical Chemistry 1 Laboratory	
CHEM 2410 & CHEM 2415	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	
CHEM 4200 & CHEM 4205	Analytical Chemistry 2 and Analytical Chemistry 2 Laboratory	

### Total Credits

**128-137**

\* At least 6 credits in EAS/GIS. No more than 3 credits at the 2000 level.

## Non-Course Requirements

Competency exam in computer use will be administered once each year and should preferably be completed during a student's freshman or sophomore year.

## Continuation Standards

Students must have a minimum of a 2.0 GPA in their earth and atmospheric sciences major courses and required related credits (biology, chemistry, mathematics and computer sciences, physics, etc.) by the conclusion of their freshman year. Students that fall below a 2.0 GPA will be placed on probation. If a student fails to obtain at least a 2.0 GPA in

their major courses and required related credits by the conclusion of their sophomore year they will not be allowed to continue in the program.

## Bachelor of Science Core Curriculum Requirements

Code	Title	Credits
Please note: beginning in Fall 2022, all incoming SLU undergraduates –regardless of major, program, college or school–will complete the University Core curriculum. You can find more information about SLU’s common Core here: <a href="https://www.slu.edu/core/index.php">https://www.slu.edu/core/index.php</a> ( <a href="https://www.slu.edu/core/">https://www.slu.edu/core/</a> )		
<b>Core Components and Credits</b>		
	Foundations of Discourse	3
	Diversity in the U.S.	3
	Global Citizenship	3
	Foreign Language	0-6
	Fine Arts	3
	Literature	6
	Mathematics	4
	Science	8
	Philosophy	6
	Social Science	6
	Theology	6
	World History	6
<b>Total Credits</b>		<b>54-60</b>

### Graduation Requirements

- Complete a minimum of 120 credits (excluding pre-college level courses numbered below 1000).
- Complete either the College of Arts and Sciences Bachelor of Arts or Bachelor of Science Core Curriculum Requirements.
- Complete major requirements: minimum 30 credits required.
- Complete remaining credits with a second major, minor, certificate, and/or electives to reach the minimum of 120 credits required for graduation.
- Achieve at least a 2.00 cumulative grade point average, a 2.00 grade point average in the major(s) and a 2.00 grade point average in the minor/certificate, or related elective credits.
- Complete department/program-specific academic and performance requirements.
- Complete at least 50% of the coursework for the major and 75% for the minor/certificate through Saint Louis University or an approved study abroad program.
- Complete 30 of the final 36 credits through Saint Louis University or an approved study abroad program.
- Complete an online degree application by the required University deadline.

## Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their

advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

Course	Title	Credits
<b>Year One</b>		
<b>Fall</b>		
EAS 1430 & EAS 1425	Introduction to the Solid Earth and Introduction to Atmospheric Science Lab	4
BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory	4
A&S Core		3
A&S Core		3
A&S Core		3
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
EAS 1450 & EAS 1455	Introduction to Oceanography and Intro to Oceanography Lab	4
BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
MATH 1300	Elementary Statistics with Computers	3
A&S Core		3
A&S Core		3
<b>Credits</b>		<b>17</b>
<b>Year Two</b>		
<b>Fall</b>		
EAS 1420 & EAS 1425	Introduction to Atmospheric Science and Introduction to Atmospheric Science Lab	4
EAS 2450	Communicating in Science	3
CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
MATH 1510	Calculus I	4
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
EAS 2400	Field Techniques in the Geosciences	3
EAS 2480 & EAS 2485	Foundations of Environmental Science and Foundations of Environmental Science Lab	4
CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
A&S Core		3
<b>Credits</b>		<b>14</b>
<b>Year Three</b>		
<b>Fall</b>		
PHYS 1310 & PHYS 1320	College Physics I and College Physics I Laboratory	4
<b>Or</b>		
PHYS 1610 & PHYS 1620	University Physics I and University Physics I Laboratory	3
EAS elective		3
A&S Core		3
A&S Core		3

A&S Core		3
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
EAS 3100	Environmental Issues	3
GIS 4010	Introduction to Geographic Information Systems	3
EAS elective		3
A&S Core		3
A&S Core		3
<b>Credits</b>		<b>15</b>
<b>Year Four</b>		
<b>Fall</b>		
EAS 4410 & EAS 4415	Hydrology and Hydrology Lab	4
EAS elective		3
A&S Core		3
A&S Core		3
<b>Credits</b>		<b>13</b>
<b>Spring</b>		
EAS 4140	Soil Science	3
EAS elective		3
EAS elective		3
A&S Core		3
A&S Core		3
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>122</b>