

Geosciences (BSEnvirSci)

This program is designed for students interested in an interdisciplinary scientific perspective on environmental and sustainability issues, analysis, and management. The degree program provides the broad foundation in physical, life, and social sciences needed for a career or graduate study in environmental science and related fields such as climate change, ecology, and conservation. Students who complete the program successfully will be able to assess environmental issues critically from multiple perspectives; to perform field, laboratory, and computer analyses; and to conduct original research. The program is designed to prepare graduates for careers in local, state, and federal government laboratories and nonprofit agencies, environmental consulting firms, environmental education and outreach agencies, and universities and other research settings. The degree is offered by the Natural Sciences with a major in biological sciences, Liberal Arts with a major in geographical sciences, and Geosciences with a major in geosciences. The degree shares common prescribed work, but each major has its own specific requirements.

Admission

Students must be admitted to the program. All students are first admitted to the University as entry-level majors in Liberal Arts with a major in geographical sciences, Geosciences with a major in geosciences, or Natural Sciences with a major in biological sciences. After completing a minimum of 24 hours in residence, students may select the major that best suits their long-term interests and, if necessary, transfer to the appropriate college or school in accordance with the regulations and procedures set forth in [General Information](#).

Geographical Sciences

Students may apply for admission after completing the following requirements: Students must earn a grade of at least C- in BIO 311C, CH 301, and M 408C or M 408N; and a grade of at least B- in GEO 401 or GEO 303. To be competitive for admission, the student must have a grade point average of at least 2.75 in these four courses.

Applications are evaluated after the end of each fall and spring semester. Students whose applications are denied may reapply through the supplemental admission process the following semester. Admission decisions are based on the student's grade point average in the basic sequence courses, his or her University grade point average, and other factors; these factors include, but are not limited to, the difficulty of the student's course load, course repetitions, and proven mathematical ability. Students should consult advisors in the Liberal Arts Student Advising Office for information about the application process and application deadlines.

Freshman Admission

Freshmen applicants seeking admission must meet the calculus readiness requirement by the official admissions application deadline. More information about the calculus readiness requirement is available through the University Admissions Office or online.

Freshmen applicants must follow the application instructions outlined on the Office of Admissions website. Applicants should apply to the EVS program in the college that best suits their anticipated area of focus (geological sciences, geographical sciences, or biological sciences, respectively).

External Transfer Admission

Students who wish to transfer to the university from another college or university must apply to the Office of Admissions as described in [General Information](#). External transfer applicants seeking admission must demonstrate calculus readiness by the official admissions application deadline. Details regarding transfer calculus readiness are available through the University Admissions Office or [online](#).

External transfer applicants must follow the application instructions outlined on the Office of Admissions website. Applicants should apply to the program in the college that best suits their anticipated area of focus (geological sciences, geographical sciences, or biological sciences, respectively).

Internal Transfer Admission

All internal transfer applicants should use the online EVS Program Transfer Application and must meet requirements for internal transfer given in [General Information](#).

To be competitive for admission, internal transfer applicants should have a grade point average of at least 3.0 in [Biology 311C](#), [Chemistry 301](#), [Mathematics 408C](#) or [408N](#) or [408K](#), and [Geological Sciences 401](#) or [303](#).

Entry-level admission is offered as space is available to the students who are best qualified. Decisions are based on the student's grade point average in the introductory science and math courses listed above, University grade point average, and other factors including, but not limited to, difficulty of course load, course repetitions, proven mathematical ability, and interest in the field of Environmental Science.

Additional Information for all internal transfer applicants:

- Application Deadline: May 1 for fall entry and December 1 for spring entry.
- Only currently enrolled students in good academic standing with their college of residence may apply.
- Students may apply during the semester they are completing the minimum requirements to be eligible for consideration.

Students should consult with an academic advisor for additional information on the application process and deadlines.

Total Hours Required: 126

Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

Course	Title	Hours
Year 1		
Semester 1		
First-Year Signature Course (090)		3
Hours chosen from:		3
GEO 303	Introduction to Geology	
GEO 401	Physical Geology	
CH 301	Principles of Chemistry I	3
M 408C	Differential and Integral Calculus	4
EVS 301	Introduction to Environmental Science	3
Hours		16
Semester 2		
EVS 311	Field Seminar in Sustainability	3
BIO 311C	Introductory Biology I	3
CH 302	Principles of Chemistry II	3

M 408D	Sequences, Series, and Multivariable Calculus	4
RHE 306	Rhetoric and Writing	3
Hours		16
Year 2		
Semester 1		
BIO 311D	Introductory Biology II	3
GRG 412E	Digital Earth	4
GEO 416S	Earth and Planetary Processes Through Time	4
GEO 416E	Solid Earth Processes	4
Hours		15
Semester 2		
Hours chosen from: Earth System course		4
PHY 317K	General Physics I	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
Free Elective		4
<u>Social and Behavioral Sciences (080)</u>		3
Hours		15
Year 3		
Semester 1		
Hours chosen from: Computational Sciences Course		3
Hours chosen from: Upper-division Disciplinary Fundamental course		3
Hours chosen from: Earth Systems course		3
<u>Humanities (040)</u>		3
<u>American and Texas Government (070)</u>		3
Hours		15
Semester 2		
Hours chosen from: Upper-division Disciplinary Fundamental course		3
Hours chosen from: Geographic Information Systems course		3
Hours chosen from: Environment and Sustainability course		3
<u>Visual and Performing Arts (050)</u>		3
<u>U.S. History (060)</u>		3
Hours chosen from: Immersion Learning course		3
Hours		18
Year 4		
Semester 1		
EVS 271	Topics in Research Experience	2
Hours chosen from: Computational Sciences course		3
MNS 320	Marine Ecology	3
MNS 120L	Laboratory Studies in Marine Ecology	1
Hours chosen from: Climate and Water course		3
Free Elective		4
Hours		16
Semester 2		
EVS 371	Topics in Research Experience	3
Hours chosen from: Upper-division Disciplinary Fundamental course		3
<u>U.S. History (060)</u>		3
<u>American and Texas Government (070)</u>		3
Free Elective		3
Hours		15
Total Hours		126

Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy [General Education](#) requirements, including [Core Curriculum](#).

Code	Title	Hours
Major		
GEO 416E	Solid Earth Processes	4
GEO 416S	Earth and Planetary Processes Through Time	4
M 408D	Sequences, Series, and Multivariable Calculus	4

or M 408M	Multivariable Calculus	
<i>Climate and Water Hours chosen from:</i>		3
GEO 347D	Global Warming	
GEO 347G	Climate System Modeling	
GEO 376E	Environmental Isotope Geochemistry	
GEO 476K	Groundwater Hydrology	
GEO 476M	Aqueous Geochemistry	
GEO 376S	Physical Hydrology	
GEO 377P	Physical Climatology	
GEO 371T	Topics in Geological Sciences: Undergraduate Seminar (any topic may count with prior approval of the faculty advisor)	

<i>Field Hours chosen from:</i>		3
GEO 348K	Marine Geology and Geophysics Field Course	
GEO 376L	Field Methods in Groundwater Hydrology	
GEO 660	Field Geology	
Other pre-approved field course from the JSG Student Services Office		

Disciplinary Fundamentals Component

Hours chosen from: Disciplinary Fundamentals Component coursework	9
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Disciplinary Fundamentals Component: Courses that survey the discipline at the advanced level, building upon introductory coursework, while also providing fundamental knowledge required for other advanced courses. Students will be guided through Areas of Study of sub-disciplines and key topical subjects.

<i>Subtotal</i>	27
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Degree (see details below)	61
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Free electives: Additional coursework to reach total hours required.

<i>Subtotal</i>	61
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General Education

Remaining Core Curriculum (42 hours total)	38
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<i>Subtotal</i>	38
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College Requirements - Geosciences

General University Requirements

Total Hours	126
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Additional Requirements and Policy

Geosciences majors may not use the same coursework to satisfy both:

- the degree's environment and sustainability requirement and the major's climate and water requirement.
- the degree's capstone research experience and the major's mathematics requirement.
- the degree's capstone research experience and the major's climate and water requirement.

Degree-Bachelor of Science in Environmental Science (BSEnvirSci)

Code	Title	Hours
Degree		
<i>Introductory Coursework</i>		
EVS 301	Introduction to Environmental Science	3
<i>Field Experience and Research Methods</i>		
EVS 311	Field Seminar in Sustainability	3
<i>Environment and sustainability</i>		
Hours chosen from: Environment and Sustainability		3

BGS 325	Social and Ethical Responsibility of Business		Ecology Hours chosen from:	6
BGS 372	Strategic Corporate Social Responsibility		Liberal Arts and Geosciences majors:	
FIN 372T	Topics in Finance (any topic)		MNS 320	Marine Ecology
GRG 309C	Creating the Sustainable Society		MNS 120L	Laboratory Studies in Marine Ecology
GRG 320J	Environmental Justice		All majors:	
GRG 342C	Sustainable Development		INB 373	Ecology (required for natural sciences majors)
GRG 342N	Sustainable Landscapes and Seascapes		INB 373L	Ecology Laboratory (required for natural sciences majors)
GRG 344G	Environmental Law		<i>Capstone Research Experience Hours chosen from: a single sequence below</i>	5
Hours chosen from: Geographic information systems		3	Sequence 1	
GRG 460G	Environmental Geographic Information Systems		EVS 271	Topics in Research Experience
GRG 462K	Introduction to Remote Sensing of the Environment		EVS 371	Topics in Research Experience
GEO 327G	Geographic Information System and Global Positioning System Applications in Earth Sciences		Sequence 2	
Earth Systems			EVS 171	Topics in Research Experience
GEO 416W	Climate, Water, and the Environment (Earth system course)	4	EVS 471	Topics in Research Experience
Additional Earth system Hours chosen from:		3	Sequence 3	
GRG 330W	Water and Watersheds		EVS 172C	Senior Research Proposal in Environmental Science
GRG 301K	Weather and Climate		EVS 472D	Senior Research in Environmental Science
GEO 347D	Global Warming		Sequence 4:	
GEO 370E	Ecohydrology and Biometeorology		EVS 272C	Senior Research Proposal in Environmental Science
GEO 476K	Groundwater Hydrology		EVS 372D	Senior Research in Environmental Science
GEO 476M	Aqueous Geochemistry		Sequence 5:	
GEO 376S	Physical Hydrology		EVS 271	Topics in Research Experience
GEO 377P	Physical Climatology		or MNS 270	Special Studies in Marine Science
Computational Science Hours chosen from:		6	& Hours chosen from:	
Liberal Arts and Geosciences majors may select:			All majors:	
GRG 462K	Introduction to Remote Sensing of the Environment		CH 320M	Organic Chemistry I
GRG 364K	Advanced Remote Sensing and Pattern Analysis		GRG 460G	Environmental Geographic Information Systems
GRG 368C	Spatial Analysis and Geographic Information Systems		GRG 462K	Introduction to Remote Sensing of the Environment
GRG 369D	GIS Applications in Social and Environmental Science		GRG 368C	Spatial Analysis and Geographic Information Systems
GRG 370C	Advanced Geographic Information Systems		GEO 327G	Geographic Information System and Global Positioning System Applications in Earth Sciences
GRG 370D	Spatial Reasoning with Geographic Information Systems		M 408D	Sequences, Series, and Multivariable Calculus
GEO 325G	Computational Applications in the Geosciences		M 408M	Multivariable Calculus
GEO 352P	Python for Geoscience Research		Liberal Arts and Geosciences majors only:	
GEO 455S	Introduction to Remote Sensing for Geoscientists		SDS 320E	Elements of Statistics (may not be counted for natural sciences majors))
PGE 338	Geostatistics and Data Analysis		SDS 320H	Elements of Statistics: Honors (may not be counted for natural sciences majors))
Natural Sciences honors students must select:			SDS 321	Introduction to Probability and Statistics (may not be counted for natural sciences majors))
SDS 320H	Elements of Statistics: Honors (required for honors; credit by exam may not be counted)		<i>Mathematics</i>	
All majors may select:			Choose a sequence below:	4
SDS 320E	Elements of Statistics (natural sciences majors must take SDS)		Sequence 1	
SDS 321	Introduction to Probability and Statistics (natural sciences majors must take SDS)		M 408C	Differential and Integral Calculus
Environmental Science Areas			Sequence 2	
Geological Sciences			M 408N	Differential Calculus for Science
GEO 401	Physical Geology	4	M 408S	Integral Calculus for Science
or GEO 403	Introduction to Geology		Sequence 3	
Geography			M 408K	Differential Calculus
GRG 412E	Digital Earth	4	M 408L	Integral Calculus

Sequence 4: Honors (required for honors; credit by exam may not be counted)	
Hours chosen from: Honors mathematics	
<i>Chemistry</i>	
Choose a sequence below:	6
Sequence 1:	
CH 301	Principles of Chemistry I
CH 302	Principles of Chemistry II
Sequence 2: Honors (required for honors; credit by exam may not be counted)	
CH 301C	Foundations of Chemistry I
CH 302C	Foundations of Chemistry II
<i>Physics Hours chosen from: a single sequence below</i>	<i>4</i>
Sequence 1	
PHY 317K	General Physics I
PHY 105M	Laboratory For Physics 302K, 303K, and 317K
Sequence 2	
PHY 303K	Engineering Physics I
PHY 105M	Laboratory For Physics 302K, 303K, and 317K
Sequence 3 Honors (required for honors; credit by exam may not be counted)	
PHY 301	Mechanics
PHY 101L	Laboratory for Physics 301
Biological Sciences Hours chosen from: a single sequence below	3
Sequence 1	
BIO 311C	Introductory Biology I
BIO 311D	Introductory Biology II
Sequence 2 Honors (required for honors; credit by exam may not be counted)	
BIO 315H	Advanced Introduction to Genetics: Honors
Total Hours	61

Additional Requirements and policy

- Students may not use the same coursework to satisfy both the degree's environment and sustainability requirement and the degree's capstone research experience.
- Students may earn only one Bachelor of Science in Environmental Science degree from the University.
- A course in one prescribed work area may not also be used to fulfill the requirements of another prescribed work area.

The following courses may substitute for [Environmental Science 271](#) and [371](#) with prior approval of the faculty advisor:

- [Biology 377](#) ([Environmental Science 271](#) only)
- [Tutorial Course 660HA](#) and [660HB](#)
- [Geological Sciences 172H](#), [173H](#), and [379H](#)
- [Natural Sciences 323](#) and [371](#)