GEOPHYSICS, B.S.

Geoscience is the study of the Earth and includes the fields of geology, geophysics and environmental science. Volcanoes, earthquakes, floods, landslides and plate tectonics are some of the things that geoscientists investigate and try to understand. Saint Louis University's Bachelor of Science in Geophysics is offered through its Department of Earth and Atmospheric Sciences.

Geophysics is a quantitative and instrument-oriented discipline that investigates the Earth's internal structure and processes by studying seismic waves and variations in the planet's magnetic and gravitational fields, as well as its rotation.

Students have access to the Saint Louis University Earthquake Center. The Earthquake Center is part of both a regional network that monitors the New Madrid seismic zone and a global network to monitor seismicity around the world. SLU is also home to the Global Geodynamics Project, which records the Earth's gravity field at a number of worldwide stations and maintains standards for the deployment of all superconducting gravimeters.

Curriculum Overview

Students in the geophysics program are given a firm foundation in solid Earth science taking courses in mineralogy, petrology (the study of rocks) and structural geology. Upper-level geophysics courses, with an emphasis on seismology, build on this foundation and ensure students are well prepared for graduate school or work in industry.

Fieldwork and Research Opportunities

Students in the department may have the opportunity for part-time work assisting faculty members with their research. Such jobs expose students to various aspects of science, as well as provide them with some income. The City of St. Louis provides opportunities for science-related volunteer work in places such as the Saint Louis Science Center and Saint Louis Zoo.

Careers

A degree in the geosciences prepares students for a variety of interesting careers. Many geoscientists work in industry or for government agencies concerned with oil and natural gas exploration and production, mining, water resources, civil engineering, waste and pollution management, environmental impact assessment, conservation and land management, policy analysis and implementation education. Students in the program also acquire a solid background in critical thinking, effective communication and computer use relevant to a variety of both scientific and non-scientific careers.

Admission Requirements

Freshman

Begin your application for this program at www.slu.edu/apply (http://www.slu.edu/apply.php). Saint Louis University also accepts the Common App.

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 course work is a primary concern in reviewing a freshman applicant's file.

To be considered for admission to any Saint Louis University undergraduate program, the applicant must be graduating from an accredited high school, have an acceptable HiSET exam score or take the General Education Development (GED) test. Beginning with the 2021-22 academic year, undergraduate applicants will not be required to submit standardized test scores (ACT or SAT) in order to be considered for admission. Applicants will be evaluated equally, with or without submitted test scores.

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

Transfer

Begin your application for this program at www.slu.edu/apply (http://www.slu.edu/apply.php).

Applicants must be a graduate of an accredited high school or have an acceptable score on the GED. An official high school transcript and official test scores are required only of those students who have attempted fewer than 24 transferable semester credits (or 30 quarter credits) of college credit. Those having completed 24 or more of college credit need only submit a transcript from 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.

International Applicants

Begin your application for this program at www.slu.edu/apply (http://www.slu.edu/apply.php).

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

- Demonstrate English Language Proficiency (http://catalog.slu.edu/academic-policies/office-admission/undergraduate/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:** Awarded based on academic achievement, service, leadership and financial need.
- **Financial Aid:** 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

Code	Title	Credits
Core Requirement		
College core requirements (p. 2)		54-63
For additional information about core courses (http://catalog.slu.edu/colleges-schools/arts-sciences/#policiestext)		
Required Courses		
EAS 1010 & EAS 1020	Earth Systems I-The Solid Earth and Earth's Environment I Lab	4
EAS 2200 & EAS 2210	Mineralogy and Mineralogy Lab	4
EAS 4050 & EAS 4060	Petrology and Petrology Lab	4
EAS 4300 & EAS 4310	Structural Geology and Structural Geology Laboratory	4
EAS 4510 & EAS 4520	Principles of Seismic Exploration and Seismic Exploration Lab	3
EAS 4550	Principles of Gravity and Magnetic Exploration	3
EAS 4600	Introduction to the Physics of the Solid Earth	3
PHYS 1610 & PHYS 1620	Engineering Physics I and Engineering Physics I Laboratory	4
PHYS 1630 & PHYS 1640	Engineering Physics II and Engineering Physics II Laboratory	4
PHYS 3110	Classical Mechanics	3
MATH 1510	Calculus I	4
MATH 1520	Calculus II	4
MATH 2530	Calculus III	4
MATH 3550	Differential Equations	3
Additional Requirement for the Applied Option		
EAS 4530	Principles of Electrical Exploration	3
General Electives		**3-12**
Total Credits		120

Continuation Standards

Students must have a minimum of a 2.00 GPA in their earth and atmospheric science 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 2.00 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
Core Components and Credits		
Foundations of Discourse (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/foundations-discourse/)		3
Diversity in the U.S. (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/cultural-diversity/)		3
Global Citizenship (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/global-citizenship/)		3
Foreign Language (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/foreign-language/)		0-6
Fine Arts (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/fine-arts/)		3
Literature (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/literature/)		6
Mathematics (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/mathematics/)		4
Science (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/sciences/)		8
Philosophy (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/philosophy/)		6
Social Science (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/social-science/)		6
Theology (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/theology/)		6
World History (http://catalog.slu.edu/colleges-schools/arts-sciences/bs-core/world-history/)		6
Total Credits		54-60

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 elective credits 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 deptartment/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
Year One		
Fall		
EAS 1010 & EAS 1020	Earth Systems I-The Solid Earth and Earth's Environment I Lab	4
General elective (p. 3)		3
A&S Core		3
A&S Core		3
UNIV 1010	Enhancing First-Year Success	1
	Credits	14
Spring		
General elective (p. 3)		3
General elective (p. 3)		3
A&S Core		3
A&S Core		3
A&S Core		3
	Credits	15
Year Two		
Fall		
EAS 2200 & EAS 2210	Mineralogy and Mineralogy Lab	4
PHYS 1610 & PHYS 1620	Engineering Physics I and Engineering Physics I Laboratory	4
General elective (p. 3)		3
General elective (p. 3)		3
A&S Core		3
	Credits	17
Spring		
PHYS 1630 & PHYS 1640	Engineering Physics II and Engineering Physics II Laboratory	4
MATH 3550	Differential Equations	3
General elective (p. 3)		3
General elective (p. 3)		3
General elective (p. 3)		3
	Credits	16
Year Three		
Fall		
EAS 4050 & EAS 4060	Petrology and Petrology Lab	4
PHYS 3110	Classical Mechanics	3
A&S Core		3
General elective		3
General elective		3
	Credits	16
Spring		
EAS 4300 & EAS 4310	Structural Geology and Structural Geology Laboratory	4
MATH 3120	Introduction to Linear Algebra	3
A&S Core		3
A&S Core		3
General elective (p. 3)		3
	Credits	16
Year Four		
Fall		
EAS 4550	Principles of Gravity and Magnetic Exploration	3
EAS 4510 & EAS 4520	Principles of Seismic Exploration and Seismic Exploration Lab	3
General elective (p. 3)		
A&S Core		3
A&S Core		3
	Credits	12
Spring		
EAS 4600	Introduction to the Physics of the Solid Earth	3
A&S Core		3
A&S Core		3
General elective (p. 3)		3
General elective (p. 3)		3
	Credits	15
	Total Credits	121

Program Notes

In freshman and sophomore years, credits for general electives should be used to take mathematics courses that may be required for the upper-level math and earth and atmospheric science courses. It is recommended that general electives in junior and senior years be taken in other upper-level earth and atmospheric science or science courses in consultation with advisor.