

GEOSCIENCE, M.S.

Students in Saint Louis University's Master of Science in Geoscience program apply physics and chemistry to study Earth processes from the surface to the core. These studies prepare SLU graduates for diverse careers in government, industry, consulting and academia.

Program Highlights

- The University's geoscience facilities include a network of seismograph stations surrounding the New Madrid fault zone; excellent computing facilities; an environmental geochemistry lab with instrumentation to analyze the chemistries of waters, soils and sediments; a remote sensing lab; and a digital image analysis lab.
- Extensive research is conducted at the Saint Louis University Earthquake Center and the Seismic Analysis and Remote Sensing Laboratories.
- Concentrations are offered in geology, geophysics and environmental geosciences.

Curriculum Overview

The non-thesis option requires 30 credits to complete; the thesis option requires 24 credits to complete, plus six thesis credits.

Three concentrations are available:

- Geology
- Geophysics
- Environmental geoscience

Fieldwork and Research Opportunities

- Active research areas in geophysics at SLU include earthquake seismology and tectonics.
- Active research areas in geology include tectonics, remote sensing, and igneous and metamorphic petrology.
- Active research areas in environmental geosciences include land-use effects on water quality, contaminant transport, hydrogeochemistry, surface water-groundwater interactions, river/reservoir sustainability, wetland biogeochemistry, fluvial geomorphology, coastal geomorphology and processes.

Careers

SLU's M.S. in geoscience program prepares students for careers in private industry and government agencies or further advanced studies. After graduating, alumni might pursue a career as an earthquake hazard analyst, environmental consultant or exploration geophysicist.

For those who want to continue their studies after completing the geoscience master's program, Saint Louis University also offers a Ph.D. in geoscience (<https://catalog.slu.edu/colleges-schools/science-engineering/earth-atmospheric-sciences/geoscience-phd/>).

Admission Requirements

Successful applicants possess sufficient GPA and English proficiency scores (for international students) and research interests compatible with ongoing research in the department.

Geology Concentration

Prerequisites include mineralogy, petrology, sedimentology and structural geology. One year each of calculus, physics and chemistry is desirable.

Geophysics Concentration

Prerequisites include structural geology, college physics, mechanics and mathematics through differential equations.

Environmental Geosciences Concentration

Prerequisites for the master's degree include an undergraduate degree in a STEM discipline with at least one semester each of calculus, physics, biology, chemistry, and geoscience, and a second semester of calculus or one semester of statistics.

Application Requirements

- Application form
- Three letters of recommendation
- Transcript(s)
- Professional goal statement
- Résumé

GRE scores are optional.

Requirements for International Students

All admission policies and requirements for domestic students apply to international students. International students must also meet the following additional requirements:

- Demonstrate English Language Proficiency (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/>)
- Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include:
 - 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
 - Any honors or degrees received.
- WES and ECE transcripts are accepted.
- In order to be issued an I-20 for your F-1 visa application, students must submit financial documents. Proof of financial support that must include:
 - A letter of financial support from the person(s) or sponsoring agency funding the student's 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 the student's study at the University

Application and Assistantship Application Deadlines

Students typically begin the program in the fall semester. Students who want to be considered for an assistantship must submit their applications by Jan. 2. Late applications and applications for the spring semester will be considered if positions are available.

Review Process

Faculty committee members examine qualified applicants' materials and make recommendations.

Tuition

Tuition	Cost Per Credit
Graduate Tuition	\$1,370

Additional charges may apply. Other resources are listed below:

Net Price Calculator (<https://www.slu.edu/financial-aid/tuition-and-costs/calculator.php>)

Information on Tuition and Fees (<https://catalog.slu.edu/academic-policies/student-financial-services/tuition/>)

Miscellaneous Fees (<https://catalog.slu.edu/academic-policies/student-financial-services/fees/>)

Information on Summer Tuition (<https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer/>)

Scholarships, Assistantships and Financial Aid

For priority consideration for a graduate assistantship, apply by the program admission deadlines listed. Fellowships and assistantships provide a stipend and may include health insurance and a tuition scholarship for the duration of the award.

Explore Scholarships and Financial Aid Options (<https://www.slu.edu/financial-aid/>)

Learning Outcomes

1. Graduates will be able to assess relevant literature or scholarly contributions in the earth and atmospheric sciences.
2. Graduates will be able to apply the major practices, theories or research methodologies in the earth and atmospheric sciences.
3. Graduates will be able to apply knowledge from the earth and atmospheric sciences to address problems in broader contexts.
4. Graduates will be able to articulate arguments or explanations to both a disciplinary or professional audience and to a general audience in oral forms.
5. Graduates will be able to articulate arguments or explanations to both a disciplinary or professional audience and to a general audience in written forms.
6. Graduates will be able to evidence scholarly or professional integrity in earth and atmospheric sciences.

Requirements

Code	Title	Credits
Required Courses		
EAS 5500	Scientific Communication	3
EAS 5900	Geoscience Journal Club	1
Elective Courses		
EAS 5190 or EAS 5390	Seminar in Geoscience Seminar in Seismology	2
Concentration Elective Courses		
Select one of the following options:		24
<i>Thesis Option</i>		
Select Concentration Electives from the following:		
Geology (p. 2)		

Geophysics (p. 2)

Environmental Geosciences (p. 3)

EAS 5990 Thesis Research

Non-Thesis Option

Select Concentration Electives from the following:

Geology (p. 2)

Geophysics (p. 2)

Environmental Geosciences (p. 3)

Total Credits **30**

Continuation Standards

Students must maintain a cumulative grade point average (GPA) of 3.00 in all graduate/professional courses.

Geology Concentration

Code	Title	Credits
Concentration Requirements		
EAS 5060	Physics of Solid Earth	3
Concentration Choice		
EAS 5170 or EAS 5180	Divergent & Convergent Margins Trans Margins & Plate Interior	3
Concentration Elective Courses ¹		
Select 18 credits of the following:		18
EAS 5120	Time Series Analysis in Geophysics	
EAS 5170	Divergent & Convergent Margins	
EAS 5180	Trans Margins & Plate Interior	
EAS 5190	Seminar in Geoscience	
EAS 5280	Environmental Geochemistry	
EAS 5390	Seminar in Seismology	
EAS 5400	Continuum Mechanics in Wave Propagation	
EAS 5410	Hydrology	
EAS 5450	Advanced Petrology	
EAS 5460	Geodynamics	
EAS 5930	Special Topics	
EAS 5981	Graduate Independent Study in Earth & Atmospheric Sciences	
EAS 5970	Research Topics	
EAS 5980	Graduate Independent Study in Earth & Atmospheric Sciences	
EAS 5990	Thesis Research	
GIS 5010	Introduction to Geographic Information Systems	
Total Credits		24

¹ The non-thesis option requires 18 credits of electives; the thesis option requires 12 credits plus six credits of thesis research.

Geophysics Concentration

The Master of Science (Thesis) in Geoscience with geophysics concentration requires a minimum of 24 credits plus a written thesis of six credits. The Master of Science in Geoscience (non-Thesis) with a

geophysics concentration, coursework option, requires a minimum of 30 credits and independent study.

Code	Title	Credits
Concentration Requirements		
EAS 5060	Physics of Solid Earth	3
Concentration Choice (https://catalog.slu.edu/colleges-schools/science-engineering/earth-environmental-geospatial-sciences/1/)		
EAS 5170 or EAS 5180	Divergent & Convergent Margins Trans Margins & Plate Interior	3
Concentration Choice (https://catalog.slu.edu/colleges-schools/science-engineering/earth-environmental-geospatial-sciences/2/)		
Select two of the following:		6
EAS 5040	Potential Theory	
EAS 5400	Continuum Mechanics in Wave Propagation	
EAS 5510 & EAS 5520	Seismic Exploration Methods and Seismic Exploration Lab	
Concentration Elective Courses ²		
Select 12 credits of the following:		12
EAS 5040	Potential Theory	
EAS 5120	Time Series Analysis in Geophysics	
EAS 5170	Divergent & Convergent Margins	
EAS 5180	Trans Margins & Plate Interior	
EAS 5190	Seminar in Geoscience	
EAS 5390	Seminar in Seismology	
EAS 5400	Continuum Mechanics in Wave Propagation	
EAS 5450	Advanced Petrology	
EAS 5460	Geodynamics	
EAS 5720	Seismological Instrumentation	
EAS 5981	Graduate Independent Study in Earth & Atmospheric Sciences	
EAS 5930	Special Topics	
EAS 5970	Research Topics	
EAS 5980	Graduate Independent Study in Earth & Atmospheric Sciences	
EAS 5990	Thesis Research	
Total Credits		24

² The non-thesis option requires 18 credits of electives; the thesis option requires 12 credits plus six credits of thesis research.

Environmental Geosciences Concentration

Code	Title	Credits
Concentration Elective Courses ³		
Select 24 credits of elective coursework in consultation with advisor. Example courses include:		24
CVNG 5330	Open-Channel Flow	
CVNG 5370	River Engineering	
CVNG 5930	Special Topics	
EAS 5190	Seminar in Geoscience	

EAS 5280	Environmental Geochemistry	
EAS 5410	Hydrology	
EAS 5981	Graduate Independent Study in Earth & Atmospheric Sciences	
EAS 5930	Special Topics	
EAS 5970	Research Topics	
EAS 5980	Graduate Independent Study in Earth & Atmospheric Sciences	
EAS 5990	Thesis Research	
GIS 5010	Introduction to Geographic Information Systems	
Total Credits		24

³ The non-thesis option requires 18 credits of electives; the thesis option requires 12 credits plus six credits of thesis research.

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.

Geology Roadmap

Course	Title	Credits
Year One		
Fall		
Elective	Advanced Petrology	3
	Physics of Solid Earth	3
	Journal Club	0
Elective	Introduction to GIS	3
Credits		9
Spring		
	Convergent Divergent Margins	3
	Scientific Communication	3
	Journal Club	0
Elective	Environmental Geochemistry	3
Credits		9
Summer		
	Thesis Research	3
Credits		3
Year Two		
Fall		
Elective	Introduction to Remote Sensing	3
	Seminar in Geoscience	2
	Journal Club	1
Credits		6

Spring	
Journal Club	0
Thesis Research	3
Credits	3
Total Credits	30

Geophysics Roadmap

Course	Title	Credits
Year One		
Fall		
Advanced Seismology I		3
Physics of Solid Earth		3
Journal Club		0
Elective		3
Credits		9
Spring		
Convergent Divergent Margins		3
Scientific Communication		3
Journal Club		0
Credits		6
Summer		
Thesis Research		3
Credits		3
Year Two		
Fall		
EAS 5040	Potential Theory	3
Seminar in Geoscience		2
Journal Club		1
Credits		6
Spring		
Continuum Mechanics		3
Journal Club		0
Thesis Research		3
Credits		6
Total Credits		30

Environmental Geosciences Roadmap

Course	Title	Credits
Year One		
Fall		
Elective		3
Elective	Introduction to Geographic Information Systems	3
Journal Club		0
Elective	Hydrology	3
Credits		9
Spring		
Elective	River Engineering	3
Scientific Communication		3
Journal Club		0
Elective		3
Credits		9

Summer		
Thesis Research	3	
Credits	3	
Year Two		
Fall		
Elective	Environmental Geochemistry	3
Seminar in Geoscience		2
Journal Club		1
Credits	6	
Spring		
Journal Club		0
Thesis Research		3
Credits	3	
Total Credits	30	

Contact Us

For more information about our program, please contact:

Linda Warren, Ph.D.
 Graduate program coordinator, geoscience
 linda.warren@slu.edu