GEOSCIENCE, PH.D.

Students in Saint Louis University's Ph.D. geoscience programs 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

- Concentrations are offered in geophysics and environmental geosciences.
- The University's geoscience facilities include a network of seismograph stations surrounding the New Madrid fault zone.
- Excellent computing facilities including:
  - An environmental geochemistry lab with instrumentation to analyze the chemistries of waters, soils and sediments
  - A remote-sensing lab
  - A digital-image analysis lab

Curriculum Overview

SLU's Doctor of Philosophy in Geosciences requires a minimum of 48 credits of coursework and exactly 12 credits of dissertation research. Up to 24 credits of coursework leading to a master's degree (https://catalog.slu.edu/colleges-schools/science-engineering/earth-atmospheric-sciences/geoscience-ms/) may count toward the credit requirement.

Fieldwork and Research Opportunities

Active research areas in geophysics include earthquake seismology and tectonics.

Active environmental geoscience research at SLU includes 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 geoscience Ph.D. program prepares students for careers in academic research, teaching, government or industrial research environments.

Admission Requirements

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

Geophysics Concentration

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

Environmental Geosciences Concentration

Prerequisites include an undergraduate degree in a STEM discipline with at least one semester each of calculus, physics, biology, chemistry, and geoscience; 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
Concentration Elective Courses		**32**
Select 32 credits of the following concentrations:		
Geophysics (p. 2)		
Environmental Geosciences (p. 2)		
Dissertation Research		**12**
EAS 6990	Dissertation Research (taken over multiple semesters)	
Total Credits		**48**

Continuation Standards

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

Geophysics Concentration

Code	Title	Credits
Concentration Requirements		
EAS 5060	Physics of Solid Earth	3
EAS 6320	Advanced Seismology II	3
EAS 6310	Advanced Seismology I	3
Concentration Choice (https://catalog.slu.edu/colleges-schools/science-engineering/earth-environmental-geospatial-sciences/1/)		
EAS 5170	Divergent & Convergent Margins	3
or EAS 5180	Trans Margins & Plate Interior	
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		
Select 14 credits of the following:		14
EAS 5040	Potential Theory	
EAS 5120	Time Series Analysis in Geophysics	
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 6100	Advanced Topics in Solid Earth Geophysics	
EAS 6981	Graduate Independent Study in Earth & Atmospheric Sciences	
Total Credits		**32**

Environmental Geosciences Concentration

Code	Title	Credits
Concentration Elective Courses		
Select 32 credits of elective course work in consultation with advisor. Example courses include:		32
BST 5400	Applied Data Management	
CVNG 5330	Open-Channel Flow	
CVNG 5370	River Engineering	
CVNG 5930	Special Topics	
GIS 5010	Introduction to Geographic Information Systems	
EAS 5190	Seminar in Geoscience	
EAS 5280	Environmental Geochemistry	
EAS 5410	Hydrology	
EAS 6981	Graduate Independent Study in Earth & Atmospheric Sciences	
Total Credits		**32**

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.

Geophysics Concentration

Course	Title	Credits
Year One		
Fall		
EAS 5510	Seismic Exploration Methods	2
EAS 5520	Seismic Exploration Lab	1
EAS 5060	Physics of Solid Earth	3
EAS 6900	Geoscience Journal Club	0
EAS 5460	Geodynamics	3
	Credits	**9**
Spring		
EAS 5170	Divergent & Convergent Margins	3
EAS 5500	Scientific Communication	3
Journal Club		0
	Credits	**6**
Summer		
Dissertation Research		2
	Credits	**2**
Year Two		
Fall		
EAS 5040	Potential Theory	3
Seminar in Geoscience		2
Journal Club		1
	Credits	**6**
Spring		
Continuum Mechanics		3
Journal Club		0
Elective		2
	Credits	**5**
Summer		
Dissertation Research		2
	Credits	**2**
Year Three		
Fall		
Time Series Analysis		3
Advanced Seismology I		3
Journal Club		0
	Credits	**6**
Spring		
Advanced Seismology II		3
Journal Club		1
	Credits	**4**
Summer		
Dissertation Research		2
	Credits	**2**
Year Four		
Fall		
Dissertation Research		1
Journal Club		0
	Credits	**1**
Spring		
Dissertation Research		1
Journal Club		
	Credits	**1**
Summer		
Dissertation Research		2
	Credits	**2**
Year Five		
Fall		
Dissertation Research		1
Journal Club		0
	Credits	**1**
Spring		
Dissertation Research		1
Journal Club		0
	Credits	**1**
	Total Credits	**48**

Environmental Geosciences Concentration

Course	Title	Credits
Year One		
Fall		
EAS 5410	Hydrology	3
Journal Club		0
Elective (Electives are chosen with advisor to tailor to student needs)		6
	Credits	**9**
Spring		
EAS 6930	Special Topics	3
EAS 5500	Scientific Communication	3
Journal Club		0
GIS 5010	Introduction to Geographic Information Systems	3
	Credits	**9**
Summer		
Dissertation Research		3
	Credits	**3**
Year Two		
Fall		
EAS 5280	Environmental Geochemistry	3
Seminar in Geoscience		2
Journal Club		1
	Credits	**6**

Spring	
Elective	3
Journal Club	0
Elective	2
Credits	**5**
Summer	
Dissertation Research	2
Credits	**2**
Year Three	
Fall	
Elective	3
Journal Club	0
Credits	**3**
Spring	
Journal Club	1
Elective	2
Credits	**3**
Summer	
Dissertation Research	2
Credits	**2**
Year Four	
Fall	
Dissertation Research	1
Journal Club	0
Credits	**1**
Spring	
Dissertation Research	1
Journal Club	0
Credits	**1**
Summer	
Dissertation Research	2
Credits	**2**
Year Five	
Fall	
Dissertation Research	1
Journal Club	0
Credits	**1**
Spring	
Dissertation Research	1
Journal Club	0
Credits	**1**
Total Credits	**48**

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