

Geosciences

The Geosciences are among the most important fields of study in our highly technological world. It brings together a study of our energy resources, mineral deposits, land utilization, water resources, the atmosphere, planetary exploration, and the universe into one complex and interrelated discipline. Earth scientists are constantly examining each of these areas relative to mankind's present and future needs in an attempt to maintain the quality of life on this planet Earth.

The primary objectives of the geosciences curriculum are:

1. To prepare students as professional geologists for jobs with the petroleum industries, regulatory agencies, civil service positions, professional consulting, and for the continuation of studies in graduate school.
2. To prepare motivated, innovative, competent, and professional earth science teachers.
3. To give non-geoscience science majors a stimulating and comprehensive background in the earth sciences to prepare them to fulfill their role as knowledgeable and informed citizens who will direct the future growth of this country.

Geosciences is a small department focused on providing students with a strong fundamental background in the geosciences. In addition to the strong background provided through classroom and laboratory experiences, Geosciences curricula emphasize getting students out into the field during fall and spring break field trips. Another emphasis is engaging students in meaningful geoscience research under the guidance of a faculty research mentor. A wide range of research opportunities exist, supported by a variety of equipment and analytical instrumentation that are available for student use. Ultimately, all of our majors present the results of their research in a senior seminar.

The Geosciences program offers two degree programs (BA in Geology, BS in Geology), a minor, and a concentration.

Baccalaureate Degree Programs

Bachelor of Science (BS) with a major in Geology

The Geology BS program is designed for students who want to combine a solid background in geology with other science and mathematics coursework. This degree program prepares students for work in a variety of fields. Although the geology background is the same for the Geology BS as for the Geology BA, some employers and graduate schools may look more favorably on the BS degree because of the stronger background in "outside" science and mathematics.

Bachelor of Arts (BA) with a major in Geology

The Geology BA program is designed for students who want to combine a solid background in geology with more flexible options for additional coursework. Students completing a BA degree complete two concentrations or a minor or another major to go along with their major. The Geology BA program gives students greater flexibility in terms of the areas of focus they want to combine with geology.

Geoscience Minors

Geology Minor

The Geology minor provides non-geology majors with a solid background in geology. It can be a good option for students majoring in another science. There is also some flexibility in this minor in terms of upper-level coursework.

Concentration

The Geology concentration provides a basic background in geology. It can typically be completed by taking three Geology courses.

Geology Program Outcomes

Student Learning Goals	Student Learning Outcomes
SLG 1: Understand important facts and concepts in the sub-disciplines essential to geology.	SLO 1: Recall key facts and be able to apply important concepts related to historical geology.
	SLO 2: Recall key facts and be able to apply important concepts related to mineralogy.
	SLO 3: Recall key facts and be able to apply important concepts related to paleontology.
	SLO 4: Recall key facts and be able to apply important concepts related to sedimentation and stratigraphy.
	SLO 5: Recall key facts and be able to apply important concepts related to geomorphology.
	SLO 6: Recall key facts and be able to apply important concepts related to hydrogeology.

	SLO 7: Recall key facts and be able to apply important concepts related to igneous and metamorphic petrology.
	SLO 8: Recall key facts and be able to apply important concepts related to structural geology.
	SLO 9: Recall key facts and be able to apply important concepts related to plate tectonics.
SLG 2: Understand how to gather and apply the information needed to solve geologic problems.	SLO 1: Be able to collect field data and apply them to solving geologic problems.
	SLO 2: Be able to collect, properly manipulate, and present laboratory data, and apply them to solving geologic problems.
	SLO 3: Be able to locate geologic literature relevant to solving geologic problems.
SLG 3: Plan, carry out, and present the results of independent research that applies concepts, field and/or laboratory data, and relevant literature to solving a geologic problem.	SLO 1: Develop a proposal that details a sound approach to carrying out a geologic research project.
	SLO 2: Effectively carry out an independent research project that addresses a geologic problem.
	SLO 3: Effectively communicate the results of their independent research in writing.
	SLO 4: Effectively communicate the results of their independent research during an oral presentation.

Bachelor of Arts with a Major in Geology

General Education

General Education courses 28

The required courses below satisfy 12 of the 38 credits needed for General Education.

Required Geology Courses

GEOL 105	Physical Geology with Lab	4
GEOL 300	Geologic Field Methods	3
GEOL 331	Soils	4
GEOL 307	Mineralogy	4
GEOL 310	Igneous and Metamorphic Petrology	4
GEOL 311	Paleontology	4
GEOL 321	Hydrogeology	3
GEOL 322	Geomorphology	4
GEOL 361	Structural Geology	4
GEOL 471	Sedimentation and Stratigraphy	4
GEOL 494	Directed Research in Geology	2
Elect 6 credits from:		6
GEOL 290 & GEOL 390 or GEOL 411	Regional Geology and Regional Field Geology Field Geology	6

Required Support Courses

CHEM 121	General Chemistry I (& CHEM 121L)	5
MATH 107	Precalculus	4
SCI 240	Research Methods	2
SCI 480	Seminar	3

Second Major/Minor/Concentration(s)/Electives 34

Total Hours 128

Bachelor of Science with a Major in Geology

General Education courses - The required courses below satisfy 15 of the 38 credits needed for General Education 23

Required Geology Courses

GEOL 105	Physical Geology with Lab	4
GEOL 300	Geologic Field Methods	3

GEOL 331	Soils	4
GEOL 307	Mineralogy	4
GEOL 310	Igneous and Metamorphic Petrology	4
GEOL 311	Paleontology	4
GEOL 321	Hydrogeology	3
GEOL 322	Geomorphology	4
GEOL 361	Structural Geology	4
GEOL 471	Sedimentation and Stratigraphy	4
GEOL 494	Directed Research in Geology	1-2

Elect 6 credits from:

GEOL 290 & GEOL 390 or GEOL 411	Regional Geology and Regional Field Geology Field Geology	6
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Required Support Courses

CHEM 121	General Chemistry I	5
CHEM 122	General Chemistry II	5
GEOG 289	Introduction to GIS	3
MATH 165	Calculus I	4
MATH 166	Calculus II	4
MATH 210	Elementary Statistics	4

Elect from (8-10 credits):

PHYS 211 & PHYS 212 or PHYS 251 & PHYS 252	College Physics I and College Physics II University Physics I and University Physics II	
SCI 240	Research Methods	2
SCI 480	Seminar	3

Electives**17-15****Total Hours****115-114****Geology Minor (Non-Teaching)**

GEOL 105	Physical Geology with Lab	4
GEOL 106	Historical Geology with Lab	4
GEOL 300	Geologic Field Methods	3
GEOL 307	Mineralogy	4
GEOL 471	Sedimentation and Stratigraphy	4
GEOL Electives 200 or Above		6

Total Hours**25****Geology Concentration**

Courses to equal 12 credits 12

At least 4 cr. must be at the 200-400 level

Total Hours**12****Physical Science Concentration**

Select three from both CHEM and PHYS courses 12

Total Hours**12****Physics Concentration****Option I** 12

PHYS 110	Astronomy	4
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PHYS 211	College Physics I	4
PHYS 212	College Physics II	4
Option II		10
PHYS 251	University Physics I	5
PHYS 252	University Physics II	5
Option III		10-12

Select two or three from any PHYS courses 300 level or above