

Bachelor of Science in Geology, Option III: Secondary Teaching

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18111 Nordhoff St.
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Academic Advisement:

Undergraduate and graduate geology majors must be advised each semester before registering for classes. Undergraduate geology majors see Dr. Sloan and graduate majors see Dr. Marsaglia. Undergraduate and graduate majors in Geophysics see Dr. Simila.

THE MAJOR: Geology is a multidisciplinary science that applies the concepts of biology, chemistry, physics, mathematics, and engineering to the natural world around us. The rich variety of its fields of study includes oceanography, paleontology, geophysics, geochemistry, hydrogeology, engineering geology, and more. That is what makes geology an exciting and challenging major for students with broad scientific interests and a love of our planet's natural systems, environment, and history.

Geology majors gain basic scientific observational, reasoning, and communication skills and an understanding of geological concepts and history. This blend of interpretive scientific ability and historical perspective gives geologists an important role in society. They apply their skills and knowledge to solve complex problems related to human interaction with natural systems, hazards, and resources and to communicate solutions and options to the public.

CAREERS: A wide variety of job opportunities in both private industry and government service are available to geology graduates. Graduates with Bachelor's degrees will normally begin their work career at entry level positions, whereas graduates with Master's degrees will start at positions with greater responsibility and have greater opportunities for long-term career advancement. Examples of opportunities in private industry include engineering geology (evaluating sites for homes, commercial buildings, highways, etc.), environmental geology (environmental impact studies, evaluation and remediation of contaminated sites), hydrogeology (development and quality control of ground water resources), and the discovery and extraction of earth resources such as oil, gas, coal, and metallic and non-metallic resources.

Agencies in all levels of government--city, county, state, and federal--employ geologists for regulatory and oversight (inspection and monitoring) activities. Additionally, a degree in geology is excellent background for preparing to teach physical science and earth science at the secondary school level and--for those with an M.S. degree--at the community college level.

Finally, the B.S. degree serves as excellent preparation for entry to graduate programs, either at Cal State Northridge or at other universities.

STUDENT LEARNING OUTCOMES OF THE UNDERGRADUATE AND GRADUATE PROGRAM:

Undergraduate majors will receive instruction of sufficient breadth, depth, and currency to prepare them for successful appointment to entry-level professional work or graduate school. At the time of graduation, they will have learned (1) background knowledge of earth materials, processes, and history; (2) skills in standard data-gathering and data-analysis methods in both lab and field settings; (3) how to identify geologic problems and develop testable hypotheses that would aid in their solution in both independent and collaborative modes; and (4) how to present polished summaries, both written and oral, of their geological discoveries.

Graduates of the Master of Science program will have received training and experience sufficient to prepare them for professional positions in the geological sciences that require a broad background knowledge of the geological sciences, substantial experience in gathering and interpreting geologic data, and skill at communicating their knowledge in a confident and competent manner. Such graduates will be well prepared to enter Ph.D. programs at other universities and to assume responsible positions (1) in industry or in government agencies; and (2) as instructors in secondary school and community college classrooms.

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OPTION III: SECONDARY TEACHING

LOWER-DIVISION REQUIRED COURSES (47 UNITS)

ASTR	152	Elementary Astronomy (3)
ASTR	154L	Observational Astronomy (1)
BIOL	106/L	Biological Principles I and Lab (3/1)
BIOL	107/L	Biological Principles II and Lab (3/1)
GEOL	101/102	Geology of Planet Earth and Lab (3/1)
GEOL	110/112	Earth and Life through Time and Lab (3/1)
GEOL	207/L	Mineralogy and Lab (3/1)
GEOL	235	Introduction to Field Methods (2)
CHEM	101/L	General Chemistry I and Lab 4/1)
CHEM	102/L	General Chemistry II and Lab (4/1)
MATH	255A*	Calculus for the Life Sciences I (3)
PHYS	100A/L**	General Physics I and Lab (3/1)
PHYS	100B/L**	General Physics II and Lab (3/1)

* or MATH 150A

**or PHYS 225, 220AL; 226, 220BL

UPPER-DIVISION REQUIRED COURSES (35 UNITS)

GEOL	307/L	Petrology and Lab (3/1)
GEOL	310/L	Structural Geology and Lab (3/1)
GEOL	322/L	Introductory Oceanography and Lab (3/1)
GEOL	341/L	Sedimentary Geology and Lab (3/1)
GEOL	343/L	Principles of Stratigraphy and Lab (3/1)
GEOL	351/L	Fundamentals of Paleontology and Lab (3/1))
GEOL	497	Research Methods and Design (1)
GEOL	505	The Evolution of Global Systems (3)
GEOL	595Y	Geological Sciences Teacher Enhancement (3)
GEOG	311/L	Atmosphere and Lab (3/1)

ELECTIVES (2 UNITS)

These should be selected from any upper-division geology courses exclusive of 300, 301. Other electives might qualify, but require approval of the departmental undergraduate advisor.

TOTAL UNITS IN THE MAJOR, OPTION III: 84

GENERAL EDUCATION (36 UNITS)

Basic Skills Mathematics and the entire section of Natural Sciences are met by required courses in the major.

ADDITIONAL UNITS: 0

TOTAL UNITS REQUIRED FOR THE B.S. DEGREE, OPTION III: 120