

MAJOR IN GEOLOGY

The Major in Geology provides an academic and practical basis for diverse professional geosciences and other careers that include private and public sector water, energy, mineral and other natural resources, geologic hazards, resources and environmental management, and education. The major also provides a quantitative science and general education preparation for graduate studies, including hydrology, geophysics, environmental geology, economic geology, resources management, public policy, and many other areas.

The Geology curriculum encompasses a strong geosciences core within the broader framework of a liberal education. Emphasis is placed on integrating field studies in the Colorado Rocky Mountains and elsewhere with extensive on-campus classroom and laboratory work. In addition to obtaining a thorough knowledge of geosciences, students complete courses in mathematics, physical sciences, communications, and the liberal arts to develop effective quantitative, decision making, and communications skills. Four concentrations are offered to allow focus on specialized career interests: Geology, Environmental Geology, Geophysics, and Hydrogeology.

Learning Outcomes

Students will demonstrate:

- A solid foundation in the physical sciences and broad understanding of geological processes
- Application of field and classroom scientific reasoning skills to data analysis and problem solving in the geosciences, both individually and in teams
- An awareness of sociopolitical, economic factors, and ethical practices and standards relevant to professional careers in geosciences

Potential Occupations

Many opportunities exist for geology graduates in the private and public sectors within a wide range of societally important and satisfying careers. Environmental management, energy resources, water resource and management, construction services, mining, power generation, computer software, and many other industries employ geoscientists in exploration, development, production, communications, building, management, and research. Federal and state agencies employ geoscientists for resource mapping and assessment, oil-gas-coal-groundwater-geothermal resource evaluation and development, resource and environmental water studies, leasing and conservation, resource restoration and rehabilitation, hazards assessment and mitigation, regulatory activities, national defense, and basic and applied research. State and local governments employ geoscientists for geologic and soils mapping and resource management, natural resources, hazards evaluation and mitigation, public information activities, consulting, management, and communications. Environmental, engineering, and water resources firms further employ geoscientists for mapping, restoration and rehabilitation planning, monitoring and evaluation of geologic and built environment hazards, and in site feasibility evaluation and implementation of construction projects, water management and reuse evaluation, groundwater pollution assessment and remediation, and contaminant prevention and treatment. Schools, colleges, universities, national laboratories, and private research firms employ

geoscientists in a variety of teaching, research, and administrative positions.

Participation in internships, volunteer activities, collaborative team-building activities, professional societies, education, and public outreach and engagement are highly encouraged and supported by the department via faculty, staff, and alumni mentoring to enhance training and career opportunities. Graduates who go on to pursue advanced degrees acquire a strong disciplinary base for diverse areas of graduate study, including environmental studies, energy, seismology, hydrology, meteorology, oceanography, and the space sciences. Geoscientists with advanced degrees can often more effectively attain management-level and research positions. Careers include, but are not limited to: instructor, professor, environmental or geological entrepreneur or consultant, exploration professional geologist, petroleum geologist, environmental geologist, geophysicist, hydrologist, mining geologist, oceanographer, production geologist, researcher, resource evaluator, geobiologist, or seismologist. With additional training and diversification, geosciences graduates may pursue associated career directions in business, law, medicine, public policy, and other diverse professional fields. By obtaining teaching certification, graduates can become primary and secondary educators in geosciences.

Concentrations

- Environmental Geology Concentration (<http://catalog.colostate.edu/general-catalog/colleges/natural-resources/geosciences/geology-major-environmental-concentration/>)
- Geology Concentration (<http://catalog.colostate.edu/general-catalog/colleges/natural-resources/geosciences/geology-major-geology-concentration/>)
- Geophysics Concentration (<http://catalog.colostate.edu/general-catalog/colleges/natural-resources/geosciences/geology-major-geophysics-concentration/>)
- Hydrogeology Concentration (<http://catalog.colostate.edu/general-catalog/colleges/natural-resources/geosciences/geology-major-hydrogeology-concentration/>)