

Program Overview: Bachelor of Science, Geosciences Geology Secondary Education Concentration



About This Major. . .

The Bachelor of Science in Geosciences with a concentration in Secondary Education is designed for students whose goal is to teach earth science in middle and high schools. The foundation of your degree will be coursework in mathematics, biology, chemistry, and physics. You then learn the concepts and skills that all geologists must know. Our program has a strong field component so that students can enjoy and learn from the diverse geological setting of the western slope of Colorado. Students are encouraged to engage in a capstone research project during their senior year that involves independent research and the completion of a professional report and presentation.

You will also complete courses to prepare you for teacher licensure. These courses help you learn how students learn. Develop strategies using the topics in your content major to help your students advance their own learning in your classroom.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning.

Students completing this major will be able to:

1. articulate the fundamental the knowledge and ideas of geoscience.
2. collect and interpret geoscience field data.
3. collect and interpret geoscience laboratory data.
4. use technology such as computer software for evaluating quantitative geoscience data.
5. write an effective report on a geoscience study.
6. give an effective oral presentation on a geoscience study.
7. instruct K-12 students based on learning plans you write to address individual learning and developmental patterns in the sciences.
8. design a safe and supportive learning environment for secondary education students.
9. apply your knowledge of geology while working with learners to access information in real world settings, assuring the learner's mastery of geology.
10. integrate assessment, planning, and instructional strategies in coordinated and engaging ways through multiple means of communication.
11. engage in meaningful and intensive professional learning and self-renewal by regularly examining practices through ongoing study, self-reflection, and collaboration.

Program Highlights:

A Field-Based Science

We have a field-oriented curriculum that allows students at all levels, from introductory to advanced courses, to learn geology in the field.

Students participate in field-based research projects. Sites include the San Juan Mountains, the Rocky Mountains, the Colorado River, and the Canyonlands.

There are internship opportunities with the US Geological Survey, US Forest Service, Bureau of Land Management and other federal agencies.

Launch Your Career

There are currently more jobs available in K-12 teaching than qualified applicants. This major can lead to teaching licensure and an opportunity to share your love of geology.

Get Involved

Learn about teaching by joining one of the several student education clubs that work on special events in area K-12 schools.

Program Requirements

A student must follow CMU graduation requirements by completing 120 semester credit hours, including 40 credits of coursework at the 300+ level. See the “Undergraduate Graduation Requirements” in the catalog for additional graduation information. Students should work closely with a faculty advisor when selecting and scheduling courses prior to registration. In general, CMU’s programs of study are based on two curriculum groups:

1. Essential Learning

CMU’s Essential Learning program provides the foundation of skills and information that cuts across all fields of study and the support for advanced concepts that students will later encounter in their majors. Before moving into work at the 300+ level, students complete the Maverick Milestone and its co-requirement, Essential Speech. This pair of courses is a capstone experience where students integrate what they have learned from their foundation courses by making connections among diverse areas of knowledge. The capstone is also an opportunity for students to work with disparate ideas, a critical skill expected of all CMU graduates that will aid them in solving the complex and unscripted problems they will encounter in their personal, professional, and civic lives.

2. What You Will Study in This Major . . .

Foundational Courses

Geology teachers must have a basic understanding of mathematics and other physical sciences:

- General Chemistry and Lab
- General Physics and Lab
- Elementary Astronomy
- Attributes of Living Systems and Lab
- College Algebra
- Trigonometry

Core Courses

All of our majors complete these courses, which are comparable to those found in geology programs nation-wide:

- Principles of Physical Geology and Lab
- Principles of Historical Geology and Lab
- Introduction to Field Studies
- Computer Applications in Geology
- Environmental Geology
- Structural Geology and lab
- Crystallography and Mineralogy and Lab
- Igneous and Metamorphic Petrology and Lab
- Applications of Geomorphology and Lab
- Sedimentology and Stratigraphy and Lab

Geology Electives

Students pursue other geology topics of interest by choosing an elective from courses such as:

- Basic Hydrology
- River Dynamics and Lab
- Introduction to Ground Water and Lab
- Renewable Energy
- Survey of Energy-Related Natural Resources
- Capstone Seminar

Secondary Education Requirements

Here you will learn the theory and practice of education and will gain considerable experience in the secondary school classroom:

- Foundations of Education
- Pedagogy and Assessment: Secondary/K-12
- Teaching to Diversity
- Integrating Literacy Across the Curriculum
- Content Methodology Practicum
- Methods of Teaching Secondary Sciences

For more information about this major, go to: <http://www.coloradomesa.edu/geosciences/index.html> or contact the Department of Physical and Environmental Sciences, 232 Wubben Hall, 970.248.1993.