

## Program Overview: Bachelor of Science, Geosciences Geology Concentration

### About This Major. . .

The Bachelor of Science degree with a major in Geosciences and a concentration in Geology is designed for students who (1) desire a strong liberal arts education with emphasis on the earth sciences, (2) wish to pursue a graduate degree in geology, or (3) desire a professional or technical geoscience career. Recent graduates are attending graduate programs at major universities or have entered the work force as geological technicians or professional geologists. Instruction takes place in a state-of-the-art science complex, which houses several instructional laboratories, a projects room, computer-applications laboratory, class preparation room, John Scholes XRD laboratory, rock-storage facilities, and a sample preparation room. Most classes have a strong field component so that students can enjoy the diverse geological setting of the Grand Junction area. Equipment available includes research petrographic microscopes, binocular microscopes, x-ray diffractometer, x-ray fluorescence, GPS units, local seismic network, and a magnetometer. Computer facilities include modern PC systems with software basics for communications, database management, word-processing, and geographical information systems (GIS).

Geology students receive a geological education that includes all necessary courses required to be a professional geologist. These include courses covering mineralogy, structural geology, petrology, petrography, geophysics, geomorphology and a six-week summer field course. Students also engage in a capstone research project/thesis during their senior year that involves independent research and the completion of a professional report and presentation. This capstone experience develops professional skills and provides students with a portfolio of their work for future employers or graduate schools.

For more information on what you can do with this major, go to <http://coloradomesa.edu/career/students/explore/major.html> and select Geology under Biological and Physical Sciences.

**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 knowledge base and ideas of the major fields of Geoscience. (Specialized Knowledge)
2. collect and interpret geoscience field data. (Applied Learning/Critical Thinking)
3. collect and interpret geoscience laboratory data. (Applied Learning/Critical Thinking)
4. use technology (e.g. computer software) for evaluating quantitative geoscience data. (Quantitative Fluency)
5. write an effective report on a geoscience study. (Communication Fluency)
6. give an effective oral presentation on a geoscience study. (Communication Fluency)

### Program Highlights:

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 Canyonlands.

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

### Launch Your Career

According to the US Bureau of Labor Statistics, job growth between 2016 and 2026 is projected to be 14%.

### Life after Mesa

Past graduates routinely find employment in energy and mineral extraction, resource management, and environmental consulting.

Many graduates go on to complete advanced degrees. Recent students have attended graduate school at institutions such as University of Colorado Boulder, University of Texas at Austin, Pennsylvania State University, University of Utah, Colorado State University, Georgia Institute of Technology, Arizona State University, and Southern Illinois University.

## 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 also is 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

Geologists must have a basic understanding of math and other physical sciences.

- General Chemistry and Lab
- General Physics and Lab
- Probability and Statistics
- Calculus I

#### Core Courses

These courses are comparable to all geology programs nation-wide.

- Principles of Physical Geology and Lab
- Principles of Historical Geology and Lab
- Introduction to Field Studies
- Computer Applications in Geology
- Structural Geology and Lab
- Crystallography and Mineralogy and Lab
- Applications of Geomorphology and Lab
- Stratigraphy and Sedimentation and Lab
- Summer Field Camp
- Seminar

#### Courses Required for Concentration

Additional courses that will provide you with a well-rounded geologic education.

- Igneous and Metamorphic Petrology and Lab
- Geophysics and Lab

#### Geology Electives

These courses will allow geology students some degree of specialization.

- Subsurface Methods
- Basin Analysis
- Basic Hydrology
- Survey of Energy-Related Natural Resources
- PETRA
- Environmental Geology
- Natural Resources of the West
- Depositional Systems Field Seminar
- Introduction to Ground Water and Lab
- River Dynamics and Lab
- Structured Research
- General Chemistry II
- General Physics II
- Calculus II

#### Electives

Electives are an opportunity for you to supplement or complement your core courses with additional work in geology, the minor in Geographic Information Systems and Technology, the minor in Watershed Science, or in any other discipline that may interest you. A strategic selection of electives can help you “cross-pollinate” your understanding of geology with concepts from other fields.

- Introduction to Cartography
- Introduction to GIS
- Introduction to Remote Sensing
- Global Positioning Systems for GIS
- Advanced GIS
- Geospatial Database and Design

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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.