



## 2017-2018 PROGRAM REQUIREMENTS

Degree: Bachelor of Science

Major: Geosciences

Concentration: Geology

### 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, petrology-mineralogy laboratory, rock-storage facilities, and a sample preparation room. Most classes have a strong field component so that students benefit from the diverse geological setting of the Grand Junction area. Equipment includes research petrographic microscopes, binocular microscopes, x-ray diffractometer, x-ray fluorescence, GPS units, local seismic network, and a magnetometer. Computer facilities include PC systems with software for communications, database management, word-processing, geographical information systems (GIS), and geostatistics. Students engage in a capstone research project/thesis during their senior year that involves independent research and the completion of a professional report and presentation. Students develop professional skills and complete 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://www.coloradomesa.edu/career/whatmajor.html>

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of 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)

### Advising Process and DegreeWorks

This document is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

### Graduation Process

Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at <http://www.coloradomesa.edu/registrar/graduation.html>.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

### **INSTITUTIONAL DEGREE REQUIREMENTS**

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree; A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

### **PROGRAM-SPECIFIC DEGREE REQUIREMENTS**

- Either GEOL 111/111L or GEOL 113/113L may be taken for credit, but not both.
- Either PHYS 111/111L or PHYS 131/131L may be taken for credit, but not both.
- A "C" or higher is required for all major and foundation courses.

### **ESSENTIAL LEARNING REQUIREMENTS** (31 semester hours)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

**English** (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)

- ENGL 111 - English Composition (3)
- ENGL 112 - English Composition (3)

**Mathematics** (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)

- MATH 151 - Calculus I (5)  
3 credits apply to the Essential Learning Requirements and 2 credits apply to Foundation Courses

**Humanities** (3 semester hours)

- Select one Humanities course (3)

**Social and Behavioral Sciences** (6 semester hours)

- Select one Social and Behavioral Sciences course (3)
- Select one Social and Behavioral Sciences course (3)

**Natural Sciences** (7 semester hours, one course must include a lab)

- Select one Natural Sciences course (3)
- Select one of the following sets of courses:
  - BIOL 102 - Plant and Animal Biodiversity (3) with BIOL 102L - Plant and Animal Biodiversity Laboratory (1)
  - BIOL 105 - Attributes of Living Systems (3) with BIOL 105L - Attributes of Living Systems Laboratory (1)
  - PHYS 112 - General Physics II (4) with PHYS 112L - General Physics Laboratory (1)
  - PHYS 132 - Electromagnetism and Optics (4) with PHYS 132L - Electromagnetism and Optics Laboratory (1)
  - CHEM 132 - General Chemistry II (4) with CHEM 132L - General Chemistry II Laboratory (1)

**History** (3 semester hours)

- Select one History course (3)

**Fine Arts** (3 semester hours)

- Select one Fine Arts course (3)

### **OTHER LOWER-DIVISION REQUIREMENTS**

**Wellness Requirement** (2 semester hours)

- KINE 100 - Health and Wellness (1)
- Select one Activity course (1)

**Essential Learning Capstone** (4 semester hours)

Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

- ESSL 290 - Maverick Milestone (3)
- ESSL 200 - Essential Speech (1)

**FOUNDATION COURSES** (15 semester hours, must earn a grade of "C" or better in each course)

- CHEM 131 - General Chemistry I (4)
- CHEM 131L - General Chemistry I Laboratory (1)
- Select one of the following sets of courses:
  - PHYS 111 - General Physics I (4) with PHYS 111L - General Physics I Laboratory (1)
  - PHYS 131 - Fundamental Mechanics (4) with PHYS 131L - Fundamental Mechanics Laboratory (1)
- STAT 200 - Probability and Statistics (3)
- MATH 151 - Calculus I (2)

**BS, GEOSCIENCES, GEOLOGY REQUIREMENTS** (56 semester hours, must earn a grade of "C" or better in each course)

**Core** (39 semester hours)

- Select one of the following sets of courses:
  - GEOL 111 - Principles of Physical Geology (3) with GEOL 111L - Principles of Physical Geology Laboratory (1)
  - GEOL 113 - Field-Based Introduction to Geology (3) with GEOL 113L - Field-Based Introduction to Geology Laboratory (1)
- GEOL 112 - Principles of Historical Geology (3)
- GEOL 112L - Principles of Historical Geology Laboratory (1)
- GEOL 202 - Introduction to Field Studies (3)
- GEOL 204 - Computer Applications in Geology (3)
- GEOL 301 - Structural Geology (3)
- GEOL 301L - Structural Geology Laboratory (1)
- GEOL 331 - Crystallography and Mineralogy (3)
- GEOL 331L - Crystallography and Mineralogy Laboratory (1)
- GEOL 402 - Applications of Geomorphology (3)
- GEOL 402L - Applications of Geomorphology Laboratory (1)
- GEOL 444 - Stratigraphy and Sedimentation (3)
- GEOL 444L - Stratigraphy and Sedimentation Laboratory (1)
- GEOL 480 - Summer Field Camp (6)
- GEOL 490 - Seminar (3)

**Required Geology Courses** (8 semester hours)

- GEOL 340 - Igneous and Metamorphic Petrology (3)
- GEOL 340L - Igneous and Metamorphic Petrology Laboratory (1)
- GEOL 404 - Geophysics (3)
- GEOL 404L Geophysics Laboratory (1)

**Restricted Electives** (9 semester hours from the following list. Either PHYS 112/112L or PHYS 132/132L may be taken for credit, but not both. Seven hours of Restricted and General Electives must be upper division.)

- GEOL 250 - Environmental Geology (3)
- GEOL 325 - Introduction to Engineering Geology (3)
- GEOL 351 - Applied Geochemistry (3)
- GEOL 355 - Basic Hydrology (3)
- GEOL 359 - Survey of Energy-Related Natural Resources (3)
- GEOL 361 - Survey of Mineral-Related Natural Resources (3)
- GEOL 370 - Renewable Energy (3)
- GEOL 394 - Natural Resources of the West (1)
- GEOL 411 - Paleontology (3) with GEOL 411L - Paleontology Laboratory (1)
- GEOL 415 – Introduction to Ground Water (3) with GEOL 415L – Introduction to Ground Water Laboratory (1)
- GEOL 443 - Field-Based Depositional Systems (3) with GEOL 443L - Field Based Depositional Systems Laboratory (1)
- GEOL 455 - River Dynamics (3) with GEOL 455L - River Dynamics Laboratory (1)
- GEOL 497 - Structured Research (1-3)
- GIST 332 - Introduction to GIS (2) with GIST 332L - Introduction to GIS Laboratory (1)
- ENVS 312 - Soil Science and Sustainability (3) with ENVS 312L - Soil Science and Sustainability Laboratory (1)
- CHEM 132 - General Chemistry II (4) with CHEM 132L - General Chemistry II Laboratory (1)
- MATH 152 - Calculus II (5)
- STAT 311 - Statistical Methods (3)
- PHYS 112 - General Physics (4) with PHYS 112L General Physics Laboratory (1)
- PHYS 132 - Electromagnetism and Optics (4) with PHYS 132L - Electromagnetism and Optics Laboratory (1)
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**GENERAL ELECTIVES** (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 12 semester hours; additional hours of upper division may be needed. Seven hours of Restricted and General Electives must be upper division.)

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## SUGGESTED COURSE SEQUENCING

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### Freshman Year, Fall Semester: 15 credits

- ENGL 111 - English Composition (3)
- MATH 151 - Calculus I (5)
- GEOL 111/111L - Principles of Physical Geology (4) or GEOL 113/113L - Field-Based Introduction to Geology (4)
- Essential Learning - Humanities (3)

### Freshman Year, Spring Semester: 14 credits

- GEOL 112 - Principles of Historical Geology (3) with GEOL 112L - Principles of Historical Geology Laboratory (1)
  - ENGL 112 - English Composition (3)
  - Essential Learning - History (3)
  - Essential Learning - Social and Behavioral Sciences (3)
  - KINE 100 - Health and Wellness (1)
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### Sophomore Year, Fall Semester: 16 credits

- GEOL 202 - Introduction to Field Studies (3)
- Essential Learning - Social and Behavioral Sciences (3)
- CHEM 131 - General Chemistry I (4) with CHEM 131L - General Chemistry I Laboratory (1)
- PHYS 111/111L - General Physics I (5) or PHYS 131/131L - Fundamental Mechanics (5)

### Sophomore Year, Spring Semester: 14 credits

- GEOL 204 - Computer Applications in Geology (3)
  - Essential Learning - Natural Science with Lab (4)
  - STAT 200 - Probability and Statistics (3)
  - ESSL 290 - Maverick Milestone (3)
  - ESSL 200 - Essential Speech (1)
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### Junior Year, Fall Semester: 14 credits

- Essential Learning - Natural Science (3)
- GEOL 301 - Structural Geology (3) with GEOL 301L - Structural Geology Laboratory (1)
- GEOL 331 - Crystallography and Mineralogy (3) with GEOL 331L - Crystallography and Mineralogy Laboratory (1)
- General Electives (3)

### Junior Year, Spring Semester: 16 credits

- GEOL 340 - Igneous and Metamorphic Petrology (3) with GEOL 340L - Igneous and Metamorphic Petrology Laboratory (1)
  - Essential Learning - Fine Arts (3)
  - General Electives (9)
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### Senior Year, Fall Semester: 13 credits

- GEOL 402 - Applications of Geomorphology (3) with GEOL 402L - Applications of Geomorphology Laboratory (1)
- Restricted Electives (9)

### Senior Year, Spring Semester: 12 credits

- GEOL 404 - Geophysics (3) with GEOL 404L Geophysics Laboratory (1)
- KINA Activity (1)
- GEOL 444 - Stratigraphy and Sedimentation (3) with GEOL 444L - Stratigraphy and Sedimentation Laboratory (1)
- GEOL 490 - Seminar (3)

### Senior Year, Summer Semester: 6 credits

- GEOL 480 - Summer Field Camp (6)
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