## GEOLOGY (GEOL)

**GEOL 5001 - RM-MSMSP: Earth Processes I (4 Credits)**
Systematic study of geological concepts, rock and mineral formation, plate tectonics, volcanism and earthquakes, landforms and weathering, historical environmental interpretation. Includes a field component. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: students should obtain permission of project director prior to enrolling in this course. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5002 - RM-MSMSP: Earth Sciences II - Sedimentology and Paleontology (4 Credits)**
Field and lecture course building on Earth Sciences I, which covers internal earth processes. Students learn about erosional processes and how sedimentary rocks are deposited and may be preserved; the different ways fossils are preserved; describing rocks in the field; and collecting, preparing and describing fossils. Provides an overview of the geology of the area so that students can place the detailed studies in context. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: GEOL 5001. Max hours: 4 Credits.

Grading Basis: Letter Grade
Prereq: GEOL 5001

**GEOL 5003 - RM-MSMSP: Earth Science in Context (4 Credits)**
Designed for teachers in the RM-MSMSP program. Topics include global climate change, glaciers, coastal geology, volcanism, and their effects on culture. Monuments such as Florissant Fossil Beds, Ice Core, Cave of the Winds and a quarry will be visited. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5004 - RM-MSMSP Research Experience for Teachers - Geology Cohort (1-6 Credits)**
A five-week research exploration in which RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands-on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: credit may not apply toward any CLAS degree. Prereq: Graduate standing. Max hours: 6 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5030 - Environmental Geology (3 Credits)**
Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and ENVS 5030. Max hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5111 - Field Methods in Geology (3 Credits)**
Introduction to the basic methods of geologic mapping (metamorphic, sedimentary, and igneous rocks), including use of the Brunton compass and Jacob Staff, as well as preparation of measured stratigraphic sections, geologic maps, and geologic cross-sections. Note: this course assumes that students have completed GEOL 1072 or GEOG 1202. GEOL 3421 is strongly recommended. Prereq: Graduate standing. Cross-listed with GEOL 4111. Max Hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5240 - Applied Geomorphology (3 Credits)**
Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: course assumes that students have completed GEOL 1202 or GEOL 1072 and GEOL 3232. Prereq: Graduate standing. Cross-listed with GEOL 4240, 5240 and GEOL 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5251 - Fluvial Geomorphology (3 Credits)**
Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOL 4251, GEOL 5251 and GEOL 4251. Restriction: Restricted to Graduate and Graduate Non-Degree students. GEOL 3232 is strongly recommended, though not required. Max Hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5780 - Engineering Geology (4 Credits)**
Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Note: this course assumes that students have completed MATH 2411 and CVEN 2121. Prereq: Graduate standing. Cross-listed with GEOL 4780 and CVEN 5780. Max hours: 4 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

**GEOL 5880 - Directed Research (1-6 Credits)**
Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade
GEOL 5939 - Internship (1-6 Credits)
Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5950 - Master's Thesis (1-8 Credits)
Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5995 - Global Study Topics (3-9 Credits)
This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with GEOL 4995. Repeatable. Repeatable.
Max Hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6840 - Independent Study: GEOL (1-3 Credits)
Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6950 - Master's Thesis (1-8 Credits)
Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6960 - Master's Project (1-8 Credits)
Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.