GEOL 500: Field Geology
Summer '17, 2017

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Teaching Assistants: In addition to faculty, field camp is taught by a sufficient number of teaching assistants so that we have a student:staff ratio no greater than 7.

Course Schedule: This is a six+ week course that is primarily taught off-campus beginning in mid-May and ending in late June. For 2016, our tentative date of departure from Columbia is May 10th with a tentative return to Columbia on June 25th. Prior to departure, we will have several preparatory and introductory meetings during the Spring Semester. Once in Colorado, students are generally in the field 8 AM to 5 PM Monday through Friday, and 8 AM to 1 PM on Saturday. Evenings are spent assembling field data collected during the day, and preparing project maps, stratigraphic columns and cross-sections. Deviations from the regular schedule occur for short courses, field trips, and due to unsafe weather as necessary.

Course Format: Students measure, describe and correlate classic Paleozoic and Mesozoic stratigraphic sections in the Cañon City area of central Colorado. These observations are used to construct geologic maps, cross sections and stratigraphic columns. Projects increase in complexity as the course progresses. The geology is mapped primarily on aerial photographs with the aid of Brunton compasses and handheld GPS receivers. In the evenings or during scheduled office time, students prepare their geologic maps and cross sections on digital topographic and/or air-photo base maps facilitated by GIS software.

In addition, there are two major field trips and two short courses. The first field trip emphasizes sedimentological, structural and petroleum geology on the Colorado Plateau in eastern Utah. The second trip, which is to the Jemez Mountains, New Mexico and the San Juan Mountains, Colorado, emphasizes the Cenozoic history of volcanism and hydrothermal activity in these locations, as well as the environmental impact of mineralization and mining on local surface water quality. There are also several shorter trips to nearby mining districts and The Great Sand Dunes and Capulin National Monuments. A short course on Geographic Information Systems (GIS) provides students with hands-on experience in the use of technology in geologic mapping. A short course on volume-balanced cross-sections aids in the development of plausible and robust geologic reconstructions and sub-surface interpretations.

This field program is in cooperation with the Department of Geology at the University of Georgia. Students and faculty from both schools work together throughout the course.

Learning Outcomes: Students completing this course will learn to:
- Recognize the common rock formations of the central Rocky Mountains
- Locate themselves and geologic features on topographic maps and aerial photographs
- Collect and record geologic observations in a field context
- Compile data collected in the field into geologic maps, cross sections and reports
- Create computer-generated geologic maps using GPS and GIS.
- Interpret geologic maps and relationships by constructing geologic cross sections
Prerequisites: GEOL 302, 325 and GEOL 355 are required, each with a grade of C or higher.

Textbooks & Resources: There is no required textbook for this course. The textbook *Geology in the Field* by Robert R. Compton is a useful resource and several copies will be available at field camp. Students may be interested in acquiring the *Geoscience Handbook: The AGI Data Sheets*, edited by J. Douglas Walker and Harvey A. Cohen. A list of required and recommended field supplies will be provided to students planning to take this course, and include personal camping gear, and some personal field geology gear.

Other: Students must maintain valid and active personal health insurance for the duration of the course, and abide by behavioral policies.

Accommodations: During most of field camp, students will reside at The Abbey, Cañon City, CO. Students share same-gender double occupancy rooms, and each have her/his own desk. Breakfast & Dinner are served during the week at The Abbey. Lunches are individually prepared by students in the morning for consumption in the field. During field trips and the drive out to Colorado, students will camp in personal tents. Students are responsible for food on the weekends when at The Abbey, and during the road trips to and from Colorado. Field camp provides all food and cooking supplies for field trips.

Grading: Field camp consists of four map projects, two field trip projects, and two short courses. Course grades are based on each student’s average grade for all exercises.