

GEOLOGY 380

Field Paleontology

Summer 2017

General Information

Geology 380 is an intensive two week field course in field paleontology with special emphasis on the Mesozoic and early Cenozoic era fossil deposits of the Bighorn Basin. Through daily hands-on experiences and evening classroom sessions, students will be introduced to various techniques used by field paleontologists in the identification, preservation and removal of fossil remains. Evening sessions will focus on regional geology, stratigraphy, basic vertebrate osteology, and anatomy of the animal groups found in the Basin (especially dinosaurs) and their significance in the rock record. Students will also have the opportunity to plan and lead a small expedition of their own. The course is primarily conducted outdoors and can include both mental and physical challenges routinely associated with field paleontology expeditions. Geology 380 was created through a partnership between Rocky Mountain College and the Bighorn Basin Paleontological Institute.

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Summer Office Location

Yellowstone Bighorn Research Association
Howell Gulch Road
Red Lodge, MT 59068

Education Goals

The general educational goals for GEO 380 are derived from the undergraduate geology program (geology concentration) learning outcomes of Rocky Mountain College.

Rocky Mountain College Learning Outcomes

Students who graduate with a concentration in geology will be able to:

- Describe geologic relationships using qualitative and quantitative data.
- Develop and test geologic hypotheses using designed data collection.
- Analyze data and use concepts to interpret the order and nature of geologic events.
- Synthesize geologic data and communicate results in oral and written form.
- Apply quantitative skills to solve geologic problems.

GEO 380 Student Learning Outcomes

Upon completion of this course, students will be able to:

- Record and refer to field experiences and findings in a properly detailed field journal.
- Know and use proper terminology associated with the tools and techniques used by field paleontologists.
- Identify and initiate appropriate field techniques to be used in the collection and removal of paleontological remains including, but not limited to, prospecting, sieving, screening, trenching, and jacketing.
- Demonstrate a working knowledge of the paleoecology, stratigraphy, and associated geologic processes that have and continue to shape the Bighorn Basin.
- Recognize and assess the numerous safety concerns and hazards that face field paleontologists.
- Manage the proper identification and field labeling of paleontological remains.
- Interpret paleoecological evidence as preserved in the rock record.
- Relate regulations pertaining to activities as set forth by the Bureau of Land Management, including regulations related to the collection, documentation, storage, and study of geologic and fossil specimens collected on federal lands.

Assessment

Student evaluation will be based on a series of performance tasks and his/her overall participation quality as indicated below. All performance tasks will be demonstrated in the first week of the course when students will be offered the opportunity to hone their skills in preparation for week 2 when formal evaluations will occur. Grades will be assigned as follows:

Performance Task 1: Mapping Part 1	10%
Performance Task 2: Site Identification and Gridding	10%
Performance Task 3: Mapping Part 2	10%
Performance Task 4: Preservation and Jacketing	10%
Performance Task 5: Expedition Planning and Crew Management	20%
Performance Task 6: Expedition Documentation	15%
Performance Task 7: Education and Outreach	15%
Attendance/Participation	10%

Performance Tasks

By the end of the course, every student will be responsible for demonstrating proficiency in each of the following field paleontology techniques and skills:

1. ***Mapping Part 1*** - The student will demonstrate proper use of topographic, geologic, and aerial maps in field paleontology.
2. ***Site Identification and Gridding*** - The student will identify a potential in-situ fossil site and set up an appropriately sized grid for mapping and cataloging the site. This task can be completed in a small group.

3. **Mapping Part 2** - The student will create an accurate, scaled sketch/map of a fossil site. This sketch can be completed in conjunction with Performance Task 2 above.
4. **Preservation and Jacketing** - The student will properly stabilize and then jacket a fossil for later transport from the field site to the lab. This task can be completed in a small group if the size of the fossil warrants.
5. **Expedition Planning and Crew Management** - The student will properly plan, deploy, supervise, and manage a small field operation.
6. **Expedition Documentation and Field Journal** - The student will keep an accurate field journal detailing all relevant aspects of the field operation.
7. **Education and Outreach** - The student will produce a brief presentation outlining the methods he/she used to achieve the objectives of *one* of the Performance Tasks 1-4. The final presentation can take the form of a formal paper or a scripted multimedia presentation.

Letter Grades

A 100% - 90%	B 89% - 80%	C 79% - 70%	D 69% - 60%	F <60%
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Text Materials

Shankle, W., Schein, J., Poole, J., Parris, D. (2017). *Bighorn Basin Paleontological Institute Field School Guide Book*. Unpublished manuscript.

Course Policies

Attendance/Participation

This is an intensive two week field course and each day will include an average of 8-10 hours of instruction per day either in the field (mornings-afternoons) or in the classroom (evenings). Students are expected to attend all sessions. Absences due to illness or other extenuating circumstances must be brought to the attention of the instructors immediately.

Late Policy

All performance tasks must be completed by the end of the last field day of the course. Due to the unique nature of the course, it is impossible to accommodate tasks that have not been completed within the allotted time of the course with the exception of Performance Task 7 which can be completed after the conclusion of the field experience provided coordination between instructor and student occurs in advance.

Academic Integrity

Rocky Mountain College has a clear academic integrity policy that outlines provisions for the following:

- Cheating
- Plagiarism
- Fabrication of data and information
- Obtaining an unfair advantage
- Aiding and abetting academic dishonesty
- Falsification of records on official documents
- Unauthorized access to computerized academic or administrative records or systems

This policy also outlines student rights and due process for disputes. Enrollment as a student in GEO 380 implies agreement to these policies. Students are encouraged to visit <http://www.rocky.edu/academics/student-records/AcademicIntegrity.php> for a detailed description of the academic integrity policies of the college.