Eastern Illinois University

New Course Proposal

ESC 5500, Advanced Earth Science Field Experience for Teachers

1. Catalog description

5500 ESC. Advanced Earth Science Field Experience for Teachers. (Arr.-Arr.- 1 to 6) Su. Advanced Field Exp. Field excursion to selected physiographic regions in the U.S. Regional field studies in geomorphology, historical geology, structure, hydrology and climatology. Land use and modification by humans will also be addressed. Prerequisite: Successful completion of ESC 4900 or equivalent experience.

2. Objectives

Emphasis will be on expanding the breadth and depth of knowledge learned in ESC 4900. The course will allow teachers the opportunity to study, off campus, important physiographic regions of the U.S. and bring their newly-acquired knowledge back to their classrooms. As teachers interact in and become more familiar with diverse landscapes, their ability to interpret and teach others about these landscapes will be enhanced.

3. Outline of the Course

The course will be excursion format, requiring students to travel over large, diverse areas throughout the duration of the course. It is expected that study time will begin just after sunrise each day and continue through the daylight hours. Time in the field will be devoted to field lectures and field exercises at selected sites. Evening class sessions and discussions will be scheduled regularly. There will be one final essay exam given prior to returning to campus. A journal or field project demonstrating the student's mastery of the historical geology, structure and regional geomorphology will be delivered to the instructor prior to the end of the semester.

An example of an 18 day course to the Colorado Plateau and Middle Rocky Mountains would perhaps go like this:

<table>
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<tr>
<th>Day</th>
<th>Activity</th>
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<tr>
<td>1.</td>
<td>Charleston, IL to Joplin, MO - load vehicles, depart EIU. The first day will provide examples of the southern till plains of Illinois and the Ozark Dome in southwestern Missouri. A thick sequence of Paleozoic rock will be examined as well as the igneous intrusive and extrusive rocks of the St. Francois Mountains. Cross sections of the area will explain the underlying structure of the region.</td>
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<td>2.</td>
<td>Joplin, MO to Guymon, OK - Carbonate rocks will be examined in the relatively humid area of southwestern Missouri. Geomorphology and weathering processes will be evaluated and later compared to similar rocks found in more arid areas of the country. An East to West cross section of Oklahoma will provide an opportunity to study the landscapes of the high plains.</td>
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<td>3.</td>
<td>Guymon, OK to Raton, NM - Basic volcanic extrusives are the dominant landform in this area. The class will study extrusive forms, from lava flows to cinder cones. There should be an opportunity to study the Dakota formation, an important aquifer, which directly underlies the volcanics.</td>
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4. Raton, NM to Taos, NM - Following the road through Cimarron Pass, we will study the frontal fault of the Rocky Mountains, metamorphic areas and the deformation around the fault zone. Capping the mountains are carbonate rocks similar to those found in Missouri; this will allow comparisons of petrology and weathering.

5. Taos/Los Alamos, NM - Effects of extensional forces, and subsequent erosion, will be examined in the Rio Grande River gorge. Several areas will be visited where Native Americans utilized the landscape for homes and agriculture. We will evaluate their methods of livelihood and compare it with the landscapes of today. The class will visit a mine site to identify and collect mineral specimens.

6. Taos, NM to Pagosa Springs, CO - Great Sand Dunes National Monument will allow interaction with one of the largest areas of wind-blown materials in the country. In the heart of the San Juan Mountains, Pagosa Springs, CO will allow us to examine the effects of hot springs on the placement of settlements and their longevity.

7. Pagosa Springs, CO to Durango, CO - The San Juan River begins in this area. It will provide an opportunity to study the growth of a river system, from its headwaters in glaciated mountains, to its middle reaches in northwest New Mexico. Stream features will be studied, measured and recorded, for later comparisons with the same river, when we see its more distant reaches in southeastern Utah.

8. Durango, CO - Here, soft sedimentary rocks meet the uplift and volcanism of the San Juan Mountains. We shall examine the interface where the igneous rocks meet the sedimentary rocks and record the deformation and metamorphism.

9. Durango, CO - A visit to Mesa Verde will illustrate the relationship between ancient native Americans and their surroundings. Wash clothes, catch up on journal and assignments.

10. Durango, CO to Silverton, CO - Visit to gold mining area. Collect mineral samples, study effects of mining on the environment.

11. Silverton, CO to Moab, UT - Examine the effects of localized uplift of Precambrian basement rocks at the Black Canyon of the Gunnison River.

12. Moab, UT - Investigation of the broad upwarps of Mesozoic rock, the landforms that result from tectonic activity and features characteristic of the Colorado Plateau.


14. Torrey, UT to Vernal, UT - Follow the Wasatch Plateau to Dinosaur National Monument, study a classic region where ubiquitous remains of vertebrate fossils were discovered. Study structure of the deformed sedimentary rocks at the edge
of the Uinta Mountains.

15. Vernal, UT to Estes Park, CO - Enter the Rocky Mountains from the west side of the orogeny, compare to the structure on the east side of the crustal uplift.

16. Estes Park, CO - Study glacial landforms and rock types of the high elevations in Rocky Mountain National Park.

17. Estes Park, CO to Abeline, KS - Drive, study, evening exam.

18. Abeline, KS to Charleston, IL - Drive back to EIU

4. Implementation
   a. This course will be taught by qualified members of the Geology/Geography faculty.

2. Course costs to students will include transportation, lodging and tuition; students will select and pay for their own meals. These costs will be explained to students prior to enrollment in the course.

3. Class materials will be selected based on the region explored.

4. This course may first be offered in Summer of 2001.

5. Rationale
   1. There is a need to provide practicing professional educators with knowledge and experiences relating to new and emerging concepts and theories in the Earth Sciences and to provide these educators with as diverse an array of physiographic settings as possible. Each area of the U.S. has a unique geologic, climatic and human occupancy history; this course will assist educators with their interpretations of landscape history.

2. The level of this course is justified because all participants of this course will hold baccalaureate degrees in teaching, will have completed ESC 4900 or have equivalent experience. Many will be teaching earth science related subjects but will be seeking additional education in specific earth science areas.

3. This course offers the opportunity to present firsthand field knowledge not available in on-campus courses, so there will be no similarity to existing courses.

4. This course is neither a requirement nor an elective in any program. It serves to provide additional earth science training to practicing teachers who have an interest or need for the subject.

6. Community College Transfer
   Not applicable.

7. Date approved by the Geology/Geography Department 12-8-00

8. Date approved by the College of Sciences curriculum committee 1-26-01
9. Date approved by the CGS

3-8-01