

I. CATALOG DESCRIPTION

A. Department Information:

Division: Science & Math  
Department: Geology  
Course ID: GEOL 260  
Course Title: Introduction to Field Geology  
Units: 2  
Lecture: 1 hours  
Laboratory: 3 hours  
Prerequisite: GEOL 100 or GEOL 101

B. Catalog Description

Demonstration, discussion and practice of field investigations of geologic environments involving describing, mapping, and identifying geologic phenomena. Field studies are required.

C. Schedule Description:

Demonstration, discussion and practice of field investigations of geologic environments involving describing, mapping, and identifying geologic phenomena. Field studies are required.

II. Number Of Times Course May Be Taken For Credit: One

III. EXPECTED OUTCOMES FOR STUDENTS

Upon completion of this course, the student will be able to:

- A. identify the principle geologic processes involved in the creation of the landscape visited during the field trip portion of the class,
- B. associate the field location with its Geologic Province and identify the features characteristic of the Province,
- C. understand the principle geologic processes involved in developing and modifying the landscape,
- D. recognize the landforms created by erosional process contrasted to those created by depositional processes,
- E. research the geologic background of the selected study site through Library or Internet exploration,
- F. understand explanations concerning the geologic origins of important geologic features in selected study site.

IV. CONTENT:

A. Part 1

1. Observing and collecting data and samples
2. Using a compass, clinometer and hand level
3. The compass traverse
4. Plotting geologic features on a base map

B. Part 2

1. Identifying an mapping geologic features on an aerial photograph
2. Geographic positioning systems
3. Field observations: notes and diagrams
4. Selecting field samples, Identification on the sample and on the map

C. Part 3

1. Field Exercise: A variety of sites may selected for geologic study. Some exercises may involve traveling considerable distances and require several days to complete. Accommodations for faculty and students will vary according to the specific circumstances

D. Part 4

1. Field Trip Summary, Final Report and Final Exam

V. METHODS OF INSTRUCTION:

- A. Lecture, including directed discussion, instructor-guided investigations, instructor-moderated problem solving sessions, and audio-visual aids-including computer-generated lecture outlines, supervised illustration of major features.

- B. Simulated field trips in which students will be shown geologic features through Internet connections or via other media, assess the results of a variety of geologic processes.
  - C. Demonstration Laboratory work with instructor-guided demonstrations of mineral and rock identification, classification of rocks and minerals, interpretation of topographic maps, and analysis of geologic maps and cross-sections.
  - D. At least one field trip is required for successful completion of the course. May involve overnight stay away from home.
- VI. TYPICAL ASSIGNMENTS:
- A. Reading Assignments
    - 1. Selected Assignments from the Textbook
    - 2. Articles covering current events in geology, especially pertaining to subjects relating to the geologic region of study
  - B. Writing Assignments
    - 1. Selected Chapter exercises from the textbook
    - 2. Instructor prepared exercises
    - 3. Field Journal describing activities in the Field
    - 4. A written term project, either a research paper or group project reflecting on the understanding of the geologic processes affecting the Field Study Area.
- VII. EVALUATION:
- A. Methods of evaluation:
    - 1. Written quizzes and/or tests of a variety of types of questions from among true-false, multiple choice, fill-in, sentence completion, and short essay.
    - 2. Written exercises.
    - 3. Written summaries of magazine or newspaper articles.
    - 4. Laboratory assignments.
    - 5. Performance in the field, including the journal.
    - 6. Performance on the term project.
  - B. Frequency of evaluation:
    - 1. Quizzes are given in lecture at weekly or bi-weekly intervals.
    - 2. Exams are given on at the conclusion of each 1/3 of the course and culminates with a comprehensive final exam.
    - 3. Exercises are assigned on a frequency to support comprehension of material, as deemed appropriate by the instructor.
    - 4. Typically, the class will take one or more field trips each semester. (totaling 7-9 days in the field)
  - C. Typical exam questions
    - 1. Describe the reasons for Magnetic Declination and how to compensate for declination.
    - 2. Draw in the space provided below the appropriate geologic symbol for the following features:
      - a. Axis of a plunging anticline
      - b. Strike and Dip Symbol representing a layer striking N 30° W, dipping 45° NE
      - c. a Normal Fault
      - d. a Thrust Fault
    - 3. Discuss the significance of the "Stratigraphic Laws" of Nicholas Steno in understanding the History of the Earth
    - 4. Given the indicated area on the geological map and the accompanying cross-section at your table, identify the principle geologic processes involved in the development of the landscape. Discuss the Geologic History of the area represented and place the major geologic events in chronological order from oldest to youngest.
- VIII. TYPICAL TEXTS:
- Robert R. Compton, *Manual of Field Geology*, 5<sup>th</sup> ed., John Wiley and Son, Inc., New York, NY, 1997  
*Engineering Geology Field Manual*, Internet edition, U.S. Department of the Interior, Bureau of Reclamation, Technical Service Center, <http://www.usbr.gov/geo/fieldmap.htm>
- IX. OTHER SUPPLIES REQUIRED OF STUDENTS: NONE