

I. CATALOG DESCRIPTION:

A. Division: Science
Department: Geology
Course ID: GEOL 251
Course Title: Geology of National Parks and Monuments
Units: 3
Lecture: 3 hours
Prerequisite: None.

B. Course Description:

A study of the geology of selected National Parks and Monuments of the United States with emphasis on the geologic processes which formed them. Field Trips are offered.

Schedule Description:

A study of the geology of selected National Parks and Monuments of the United States with emphasis on the geologic processes which formed them. Field Trips are offered.

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 principal geologic processes involved in the creation of the landscapes of most of the Nation's scenic national parks,
- B. associate a regional location and geologic province to most of the scenic national parks,
- C. understand the principal 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 any national park through library or Internet exploration, and
- F. understand semi-technical explanations concerning the geologic origins of important landscape features in national parks.

ADVISORY ENTRANCE SKILLS

Reading: Before attempting this class students should be able to:

1. read actively, annotating and paraphrasing the text,
2. summarize accurately,
3. evaluate evidence for relevance to one's purpose, and
4. distinguish between facts, opinions, assumptions, and inferences,
5. understand a common English vocabulary equivalent to a High School Education,
6. be able to assimilate a new technical vocabulary appropriate to the subject matter.

Writing: Before attempting this class students should be able to:

1. organize information around a central idea,
2. select and present relevant evidence to support a proposition,
3. create a focused thesis statement, and
4. write sentences free of gross grammatical errors.

V. CONTENT:

- A. National Park Landscapes Developed By Erosion In Horizontal Sedimentary Rocks:
1. The Grand Canyon
 2. Zion
 3. Bryce Canyon
 4. Capitol Reef
 5. Canyonlands
 6. Arches
 7. Mesa Verde
 8. Petrified Forest
 9. Badlands

- B. National Park Caves And Reefs:
 - 1. Mammoth Cave
 - 2. Wind Cave
 - 3. Carlsbad Caverns
 - 4. Guadalupe Mountains
 - 5. Virgin Islands
- C. National Park Landscapes Formed By Glaciation:
 - 1. Voyageurs
 - 2. Isle Royale
 - 3. Acadia
 - 4. Rocky Mountain
 - 5. Waterton-Glacier International Peace Park
 - 6. Gates of the Arctic
 - 7. Yosemite
 - 8. North Cascades
 - 9. Olympic
 - 10. Glacier Bay
 - 11. Wrangell- St. Elias
 - 12. Kenai Fjords
- D. National Park Volcanic Features And Volcanic Activity
 - 1. Mount Rainier
 - 2. Crater Lake
 - 3. Lassen Volcanic
 - 4. Katmai
 - 5. Lake Clark
 - 6. Hawaii Volcanoes
 - 7. Haleakala
 - 8. Yellowstone
- E. National Park Landscapes And Features Associated With Complex Mountains:
 - 1. Grant Teton
 - 2. Great Basin
 - 3. Sequoia and Kings Canyon
 - 4. Channel Islands
 - 5. Redwood
 - 6. Hot Springs
 - 7. Big Bend
 - 8. Shenandoah
 - 9. Great Smoky Mountains
- 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.
- VI. TYPICAL ASSIGNMENTS:
 - A. Reading Assignments
 - 1. Selected Assignments from the Textbook
 - 2. Articles covering current events in geology, especially pertaining to activities affecting National Parks
 - B. Writing Assignments
 - 1. Selected Chapter exercises from the textbook
 - 2. Instructor prepared exercises
 - 3. Field Journal describing visits to National Parks
 - 4. A written term project, either a research paper or group project reflecting on the understanding of the processes of landform development in National Parks.

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 basis 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 two field trips each semester.
- C. Typical exam questions
 - 1. Describe the geologic qualities of the Wasatch Formation that contribute to the formation of the characteristic features of Bryce Canyon NP.
 - 2. Mark the locations of the following National Parks (within reason) on the map provided..
 - a. Yellowstone
 - b. Grand Canyon
 - c. Zion
 - d. Isle Royale
 - e. Mammoth Cave NP
 - f. Arches
 - g. Badlands
 - h. Yosemite
 - i. Carlsbad Caverns
 - j. Crater Lake
 - 3. Select 5 national parks from the list above and describe the distinguishing geomorphic features of each park and the geologic process or processes involved in creating each geomorphic feature:
 - 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 placing the major geologic event in chronological order from oldest to youngest.

VIII. TYPICAL TEXTS:

- Harris, David V. and Eugene P. Kiver, *The Geologic Story of the National Parks and Monuments*, 4th ed., John Wiley and Sons, 1995
- Harris, Ann G., Esther Tuttle, & Sherwood Tuttle, *Geology of National Parks*, 5th ed., Kendall/Hunt, 1997

IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None