

GSC 110: Geology of the National Parks Syllabus

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Office hours: By appointment

Required Texts:

Encounters with the Archdruid, John McPhee

Desert Solitaire, Edward Abbey

Additional Readings: To be selected and posted online

Course description: Encompassing over 84 million acres, America's National Park System preserves some of our most cherished natural, cultural and historic places. While the general public may see them primarily as recreational spaces, many parks also serve as focal points for studying a variety of classic and unique geologic settings, as well as their associated ecosystems. Students will explore the history of the park system from its initial inception to the present, and analyze and interpret data from scientific research conducted within park boundaries.

Course objectives & assessment:

Objective 1: At the completion of the course, students will be able to describe how the National Park Service was established and how it is presently managed.

Assessment: Students will show proficiency by successfully completing a series of online assignments and evaluation tools.

Objective 2: At the completion of the course, students will understand basic concepts in physical geology and geomorphology, as seen through the lens of plate tectonics.

Assessment: Students will show proficiency by successfully completing a series of online assignments and evaluation tools.

Objective 3: At the completion of the course, students will demonstrate an understanding of scientific reasoning and hypothesis testing.

Assessment: Students will show proficiency by contributing to online discussions about scientific research in the parks, and by producing a formal report that demonstrates an understanding of the hypothetico-deductive method.

Student assessment

Exams: At appropriate points during the course, students will be required to take online exams.

Reading assignments and Discussion groups: There will be a number of primary and secondary scientific articles to be read during the course. They will be selected to complement and enhance

the earth science content, and to illustrate exemplary research being undertaken in the parks. Students are expected to read each article in a timely fashion, and to participate fully in discussions about the design and results of these studies.

Research Design paper: Each student will be responsible for producing a term paper that evaluates the research design of an existing study, and that describes a reasonable plan for hypothetical follow-up research related to the original study.

Grade tally:

Four online exams (@ 10% each)	40%
Timely completion of other assignments	10%
Contributions to online discussions	30%
Research design response paper	20%

Grading scale:

92.0 – 100	A
90.0 - 91.9	A-
88.0 – 89.9	B+
82.0 – 87.9	B
80.0 – 81.9	B-
78.0 – 79.9	C+
72.0 – 77.9	C
70.0 – 71.9	C-
68.0 – 69.9	D+
60.0 – 67.9	D
less than 60	F

Academic philosophies

Honor Code: I fully support the Cedar Crest College Honor Code as stated in the Student Handbook.

Classroom Protocol: I fully support the Cedar Crest College Classroom Protocol Code as stated in the Student Handbook.

Plagiarism: I fully support the Cedar Crest policy on plagiarism. Cases of plagiarism, whether deliberate or accidental, will not be tolerated and will result in an “F” for the given assignment.

Learning disabilities: Students with documented disabilities who may need academic accommodations should discuss these needs with their professors during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.

The Bottom Line

Your success in this class is up to *you*. I can help you to understand difficult material, but it is your responsibility to read the assigned material in a timely fashion, and to organize information so that you can retrieve it.

**GSC 110: Geology of the National Parks
Schedule of Topics**

History of the National Parks

Geologic time

Structure of the earth

Plate tectonics

Earth materials

Hot spots and mantle plumes

Geothermal ecosystems

Parks: Hawaii, Yellowstone

Active convergent margins

Parks: Crater Lake, Mount Rainier,
Mount St. Helens

Ancient convergent margins

Parks: Acadia, Denali, Rocky Mountain,
Shenandoah, Yosemite

Transform boundaries

Parks: Point Reyes, Virgin Islands

Sedimentology and stratigraphy

Fluvial and desert features

Parks: Arches, Badlands, Bryce Canyon,
Death Valley, Grand Canyon, Zion

Coastlines

Parks: Cape Cod, Cape Hatteras

Caves

Parks: Carlsbad, Mammoth

Fossils

Parks: Badlands, Florissant, Great Basin,
John Day, Zion

Research in the Parks

Other topics TBD