

GEOL 301 — GEOLOGY OF NATIONAL PARKS AND MONUMENTS

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Text: Harris et al. (1995) *Geology of National Parks*, 5th Ed.; available at Aztec Shops.

Supplemental Readings: Camp (2000); available at Aztec Shops

Course Description:

The constantly evolving earth has been shaped by a variety of geologic processes, an understanding of which gives us a greater appreciation of our dynamic planet and a more knowledgeable perspective of our fragile environment. This course uses examples from our National Parks and Monuments to describe the interactive processes that have shaped the North American continent (and Hawaii) through geologic time. The course prerequisite is Geology 100 or equivalent.

In the mid-1960s, refinements in the continental-drift and seafloor-spreading hypotheses led to a revolution in the earth sciences which cumulated in the unifying theory of plate tectonics. Almost all major geologic events can now be described in the context of the plate-tectonic model (the major exception being the proposed catastrophic events associated with periodic meteorite impacts). In order to convey some of the intellectual excitement associated with this working model, and with geology in general, this course will follow the tenets of plate-tectonic theory in describing the geology of our National Parks and Monuments. The local geology of selected parks will be described in some detail, and their genesis will be then be related to a more regional perspective of plate-tectonic evolution.

Guidelines:

Pay close attention to the lecture schedule. Read carefully the appropriate chapters in the text and supplemental reading that apply to each topic *before* we discuss them in class. The text and readings, however, will only cover a portion of the material discussed in lecture; class attendance is therefore an important prerequisite for a passing grade. Questions are encouraged and can be asked at any time -- during, before or after class.

Evaluation:

There will be two 20-point quizzes, a 100-point mid-term exam, and a 100-point final exam. The final exam will *not* be comprehensive; however, it will cover all material discussed in class after the mid-term exam. Purchase *one* large red Parscore scantron (F- 288) for the first quiz and three normal-sized Parscore scantrons (F-289) for the remaining exams and quiz. There are ***no make-up exams*** or ***make-up quizzes***. If you are taking the course CR/NC, you must obtain a "C" grade for Credit. Final grades will be based on following percent scale out of 240 total points.

A = 100 - 92 %	C+ = 79.99 - 78%	F < 50%
A- = 91.99 - 90%	C = 77.99 - 70%	
	C- = 69.99 - 65%	
B+ = 89.99 - 88%	D+ = 64.99 - 63%	
B = 87.99 - 82 %	D = 62.99 - 55%	
B- = 81.99 - 80%	D- = 54.99 - 50%	

PRELIMINARY LECTURE SCHEDULE

DATE	TOPICS
January 31	Earth differentiation / Minerals / The Rock Cycle / Weathering and Erosion
Feb. 7	Rock Types / Surface Profile of Earth / Plate Tectonics
Feb. 14	Plate Tectonics / Physiographic Provinces
Feb. 21	Physiographic Provinces / Geologic Evolution / Volcanic Features
Feb. 28	QUIZ 1 / Volcanic Features
March 6	The Cascade Volcanic Arc / Mt. Rainier
March 13	Mt. St. Helens NVM / Mt. Lassen NP / Crater Lake NP
March 20	Hotspot Volcanism / Hawaiian Volcanoes NP / Yellowstone NP
March 27	MID-TERM EXAM / Geologic Time
April 3	Geologic Time / Sedimentary Environments
April 10	Structural Geology / The Colorado Plateau / Grand Canyon NP
April 17	**SPRING BREAK**
April 24	Zion NP / Bryce Canyon NP/ Capitol Reef NP / Canyonlands NP
May 1	QUIZ 2 / Arches NP / The Sierra Nevada Batholith
May 8	Yosemite NP / Sequoia and Kings Canyon NP's / Redwood NP
May 15	The Basin and Range Province / Death Valley NP
May 22	FINAL EXAM – 1900-2100

Notes: (1) Changes may be made to this schedule as necessary.

(2) If time permits, we may also cover the Great Basin, Olympic, and Wrangell/St. Elias National Parks.