



GEOS 102: *Geology in the National Parks* SYLLABUS: Fall 2012

Description and Objectives:

Study of the processes that have shaped the Earth, including earthquakes, volcanoes, erosion, glaciation, sedimentation, structural deformation; and the geologic history of North America, including mountain building and ocean advances and retreats. Focus on the geological features seen in our National Parks. A student taking this course will gain an awareness of geology in the most commonly visited natural areas, an introduction to the physical, chemical, and life processes that shape the Earth and the geologic history of Earth, and an appreciation for the importance of geology and the role of science in public policy.

Course Information

Instructor: Dr. Karl W. Leonard

Office: KH 204

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url: <http://www.mnstate.edu/leonard>

office hours M, F 1:30- 3:30, W 9:00-10:30 & 1:30-2:00, T, Th 9:00-11:00 am, or whenever I'm in my office

text: Lillie – **Parks and Plates (P&P)**, – available at the bookstore

Class web page: can be found on: <http://www.mnstate.edu/leonard>

Building and Room #: King 115

Instructional Strategies:

This course will be presented in a short-lecture format mixed with small and large group activities and discussions.

Course Requirements

There are two primary components of this class. 1) Participation includes attendance and daily questions, work in discussion groups, and exercises. 2) Tests of knowledge include three lecture quizzes and a final exam.

Evaluation/Grading

The total grade is calculated from a standard 100% scale. The grade will be determined from:

lecture quizzes (60%): There will be 3 lecture exams, each worth 15% of the lecture grade. Students will take a comprehensive final exam worth 15% of the total grade. No make-up exams will be offered.

daily questions (5%): Each class will begin with a short answer question from the assigned reading

exercises and discussions (35%): Short discussion reports will comprise 10% of the grade, and exercises (5 to 7) will be worth 25% of the total grade.

Final Exam: December 13th – Noon

LASC

This course meet the requirements for Goal 3: Natural Science (lab-like course) - a summary of which is as follows:

GOAL 3: Natural Sciences

Goal: To improve students' understanding of natural science principles and of the methods of scientific inquiry, i.e., the ways in which scientists investigate natural science phenomena. As a basis for lifelong learning, students need to know the vocabulary of science and to realize that while a set of principles has been developed through the work of previous scientists, ongoing scientific inquiry and new knowledge will bring changes in some of the ways scientists view the world. By studying the problems that engage today's scientists, students learn to appreciate the importance of science in their lives and to understand the value of a scientific perspective. Students should be encouraged to study both the biological and physical sciences.

Students will be able to:

- Demonstrate understanding of scientific theories.
- Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
- Communicate their experimental findings, analyses, and interpretations both orally and in writing.
- Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

Policies

Attendance: Students are expected to attend all class meetings.

Special Accommodations: Students with disabilities who believe they may need an accommodation in this class are encouraged to contact Greg Toutges, Director of Disability Services at 477-4318 (Voice) or 1-800-627-3529 (MRS/TTY), Flora Frick 154 as soon as possible to ensure that accommodations are implemented in a timely fashion. Information regarding Disability Services is available at web.mnstate.edu/disability.

Academic Honesty: (See MSUM Student Absence Policy, Student Handbook: <http://web.mnstate.edu/sthandbook/> (under bookmark Student Policy Info).

Lecture Schedule (Tentative)

Week	AGE	Topic	Reading
1 August 27		M – Logistics & Introduction W - What is Geology – Earth Processes & History F - Rocks and what are they good for	P&P - preface P&P – Ch. 2 P&P – Ch. 2, p. 31-34
2 Sept. 3		M – Labor Day – no class W – Geologic Time F– Geology in the Grand Canyon	P&P – Ch. 2, p. 21-26 P&P – Ch. 4
3 Sept 10	Paleozoic	M – Stratigraphy in the GC W - What does the GC tell us and how did it form? F – What does the GC tell us and how did it form?	P&P – Ch. 4
4 Sept. 17		M - What does the GC tell us and how did it form? W – Geology in Smokey Mountain and Shenandoah NP F- Plate Tectonics	P&P – Ch. 6 P&P – Ch. 1
5 Sept. 24		M- Plate Tectonics W- Plate Tectonics and the Appalachian Orogeny F – Lecture Quiz 1 – Sept. 28	P&P – Ch. 1 P&P – Ch. 6, p. 133-144
6 Oct. 1		M - Carlsbad Caverns and Guadalupe Geology W- Caves, reefs, and Permian History F- Caves, reefs, and Permian History	P&P – Ch. 3 P&P – Ch. 10, p. 215-226
7 Oct. 8	Mesozoic	M – Geology of Canyonlands, Arches, and Dinosaur W- Geology of Canyonlands F – Geology of Arches	P&P – Ch. 10 P&P – Ch. 10, p. 228-236
8 Oct. 15		M- Fall Breather – no class W- Mesozoic History F- Mesozoic History	P&P, Ch. 10, p. 233- 237
9 Oct. 22	Cenozoic	M – Dinosaur ecology and extinction W- Dinosaur ecology and extinction F- Badlands and Theodore Roosevelt Geology	supplemental P&P, Ch. 10, p. 226-228
10 Oct. 29		M- Badlands erosion W- Cenozoic history F- Lecture Quiz 2 – Nov. 2nd	
11 Nov. 5		M – Mount Rainier, Crater Lake, and Yellowstone W- Volcanism F- Cascade Volcanoes and other volcanic belts	P&P, Ch. 5, p. 94-115 P&P, Ch. 2, p. 34-40 P&P, Ch. 5, p. 105-115
12 Nov. 12		M – Yellowstone and other BIG volcano W- Volcanic Hazards and cheesy volcano films F- Geysers and hot springs	P&P, Ch. 9
13 Nov. 19		M – Waterton-Glacier, Rocky Mountain, and Voyageurs W- No Class – Fall Break F- No Class – Fall Break	P&P Ch. 10

14
Nov. 26

M- Ice Ages
W- Alpine Glaciers
F - Alpine glacial features

P&P, Ch. 10, p. 233- 237

15
Dec. 3

M- Ice Ages
W - local glacial features
F- **Lecture Quiz 3 – Dec. 7**

16
Dec. 10

M – **Virgin Islands and Dry Tortugas**

P&P, Ch. 7, p. 164

Final Exam: December 17th – Noon