GEOL 230
Geology of the National Parks

Spring 2011: T & Th 11AM-12:15 PM
Lecture Hall: PSC 006

Dr. Gwendelyn Geidel
PSC 108, 777-7171;
geidel@environ.sc.edu

Dr. Geidel's Office Hours: Thursday 2-3 PM & Friday 3-4 PM
or e-mail for an appointment anytime 10-6 M-F (**preferred**)

Instructional Assistant:

Textbook: Geology of National Parks (6th Ed.); Harris, Tuttle & Tuttle

Course Description

This is an introductory course in geology, with an emphasis on the Federal Park system, including the National Parks, Monuments, Seashores, etc. Material will include both general explanations of geologic processes, as well as specific examples from parks.

Learning Outcomes

The main objective is to familiarize students with geologic processes as exhibited in the National Parks. Geology is the study of the Earth (not just rocks), including its surface and interior, as well as the interactions with living organisms, including us. The most important concept to learn is that all things, even rocks, are constantly changing. The point of geology as a modern science is to understand the processes and rates whereby those changes occur. Therefore, students upon completion of this course will have the following learning outcomes:

- Students will demonstrate an understanding and use of the basic principles, concepts and terms of Geology as we explore the National Parks.
- Students will demonstrate and apply an understanding of the scientific method using observation of the processes that formed the parks (erosion, glaciation, volcanism, faulting, among others), inquiry into the processes, formulation of hypotheses and experimentation to explain these natural processes
- The students will evaluate the relationships between the science related to the formation and preservation of the National Parks and its relationship to technology and society in preserving and maintaining the natural processes so that the Parks can be sustainable for generations to come.

Through the in-depth study the National Parks, students will learn the value of the environment and the sustainable practices that must be utilized to allow the beneficial interaction of society with these special preserved areas.

Textbook

One textbook is required – Geology of National Parks (6th Ed.), by Harris, Tuttle, & Tuttle. The text may be supplemented with other reading assignments and there are Internet resources I may ask you to access and read
(e.g., NPS' site: http://www2.nature.nps.gov/grd/tour/index.htm). You are responsible for

the material I assign for reading, even if that material is not discussed in class.

Instructional Procedure

This is primarily a lecture class, but there will be demonstrations and experimentation to allow students to understand the principles of Geology. Although the class is relatively structured, you are strongly encouraged to ask questions for clarification at any time during class.

Grading

This course will have 4 exams that will constitute 100% of your grade: 3 in-class, closed book tests and 1 cumulative final; also closed book. Of the 3 tests given during the semester, I will drop the lowest grade so that only 2 will count towards your grade and the 2 tests will count towards 70% of your grade. You cannot drop the final exam and it is worth 30 % of your grade. Each exam will consist of 50-100 multiple-choice questions. Some topics may appear on more than one exam. The final exam will cover the entire course. Because you will drop the lowest grade, there are NO make-up exams.
A= 90-100, B+ = 87-89, B=80-86, C+ = 77-79, C=70-76, D+= 66-69, D=60-65, F<60.

Extra Credit. Approximately each week I will offer you the opportunity to take a short quiz. Each quiz can be used for one point extra credit and approximately 10 quizzes or up to 10 extra credit points will be available. A quiz is worth 1 point if you get 100, 0.8 points if you get an 80, 0.5 points if you get a 50, etc. The quizzes will be given during the first 5 to 10 minutes during class on Thursdays and they will help prepare you for the exams. They are extra credit so you do not have to take them; however, you must take them at the time they are given. No make-ups or early or late quiz times.

If you do the assigned readings and make an effort to understand the material, you should have no problem passing the course. I may offer other optional extra credit assignments. They will be announced in class and will be due the following week.

Academic Integrity

All students at USC are expected to conform to the Code of Student Academic Responsibility. Specifically, "*It is the responsibility of every student at the University of South Carolina Columbia to adhere steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any academic program. Any student who violates this rule shall be subject to discipline*." Furthermore, "*any member of University community, who has reasonable grounds to believe that an infraction of the Code of Student Academic Responsibility has occurred, has an obligation to report the alleged violation.*" Any cheating during quizzes or exams will result in an F for the course. I will do my best to help you avoid cheating on exams and quizzes, but ultimately it is your responsibility.

Websites
Park Geology Tour: http://www2.nature.nps.gov/geology/tour/index.cfm
Park Geology Photos: http://www2.nature.nps.gov/grd/edu/images.htm
U.S. Geological Survey: http://www.usgs.gov
USGS Volcanoes: http://volcanoes.usgs.gov
USGS Earthquakes: http://earthquakes.usgs.gov

Class Schedule:

Week	Lecture Topic	Reading Assignment *
Week 1: Jan 11 & 13	Introduction/Overview	xi
	Geochronology and Geologic Time Scale	p.1-6,
Week 2: Jan 18 & 20	Weathering and Rock Cycle	p. 13-15
	Intro to Grand Canyon National Park	Ch 1
Week 3: Jan 25 & 27	Grand Canyon/Canyonlands National Park	Ch 1,5
	Zion, Bryce, Capitol Reef, Arches	Ch 2-4,6
Week 4: Feb 1	Review for Exam and Catch up	
February 3, 2007	**Exam 1**	**EXAM 1**
Week 5: Feb 8 & 10	Mesa Verde, Petrified Forest	Ch 7,8
	Great Sand Dunes, Badlands, Cuyahoga Valley	Ch 12,9,13
Week 6: Feb 15 & 17	Caves and Reefs	p. 188
	Mammoth Cave, Wind Cave, Carlsbad Caverns	Ch 14-16
	Guadalupe Mtns, Virgin Isl, Dry Tortugas	Ch 17,18,21
Week 7: Feb 22 & 24	The Role of Groundwater	p. 189
	Everglades, Biscayne, Congaree NP	Ch 19,20, Handout
Week 8 : March 1	Review and catch up	
March 3	**Exam 2**	**EXAM 2**
March 7-11	SPRING BREAK	
Week 10: Mar 15, 17	Volcanoes	p. 505-510
	Hawaii Volcanoes, Haleakala, Samoa	Ch 40-42
	Yellowstone, Mt. Rainier, Crater Lake	Ch 43, 35, 36
Week 11: Mar 22, 24	Major Mountain Belts	p. 643-646
	Grand Teton, Great Basin,	Ch 44,45
	Great Smokey Mtn., Shenandoah,	Ch 54,55
Week 12: Mar 29	Review and Catch up	
Week 12: March 31	**Exam 3)**	**EXAM 3**

Week 13: Apr 5 & 7	Glaciation	p. 289-294
	Voyagers, Acadia	Ch 22, 24
Week 14: Apr 12, 14	Rocky Mountain, Yosemite	Ch 25, 28
Week 15: Apr 19, 21	Glacier Bay, Denali, Kenai Fjords	Ch 31-34
Final: May 5 @ 9:00am	**Tuesday, May 3 - 9:00 a.m Final Exam**	**FINAL EXAM**

* - Extra reading from websites or placed on Blackboard may be assigned and will be announced in class and on Blackboard.