

SIO 16 - Geology of National Parks
Spring 2017 Syllabus

Lectures: M,W,F 3:00-3:50 in Warren Lecture Hall 2204

Instructor: Jeff Gee (jsgee@ucsd.edu; x44707)

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Office hours: York 3030 on Wednesdays and Thursdays 4-5 pm. I'm happy to schedule additional times as needed. You can also post questions on the Discussion Board on TritonEd as we will be monitoring this as well.

Overview: Ever wondered why there are so many geysers in Yellowstone, how the sandstone arches in Arches National Park form, or why there are all those rounded boulders at Joshua Tree National Park? In this class, we'll explore how geologic processes control the landscapes and features in our parks and along the way learn about the concepts of geologic time, plate tectonics and how the rock record can be used to reconstruct the geological story of the parks.

Readings: Lecture notes, Powerpoint slides and supplementary material provided on TritonEd will cover the essential material. For additional background reading there will be copies of *Geology of National Parks* (Harris, Tuttle, and Tuttle) and *Parks and Plates* (Lillie) on reserve in the library. Relevant sections will be noted in the lecture notes.

Grading: Grades will be based primarily on two hour exams (45% total) and the final exam (35%), which will be cumulative but weighted toward the material after the second exam. The remaining 20% of the grade will come from homework assignments. The homework assignments will typically be posted on Mondays of weeks where no exam is scheduled and will be due on the Friday of that same week.

Academic Integrity: I encourage you to come to office hours for help with the homeworks. You are free to work with others on the homework assignments, though everyone must write up and turn in his or her own work. Identical answers (i.e. word for word copies) will result in a grade of 0 for both papers. Exams are expected to be entirely your own work and any suspected cheating will be referred to the academic integrity office.

Field Trips: We will have two optional field trips that will reinforce some of the concepts we will be discussing in class. The first of these will be a ~2 hour trip on Saturday April 22 where we will look at some of the local sedimentary rocks near the Scripps pier. The second field trip will be an all day trip to Joshua Tree National Park on Saturday June 3.

Date	Topic	Module
April 3	Grand Canyon - a geologic view of time	CP
April 5	Interpreting the Grand Canyon sedimentary record	CP
April 7	Grand Canyon - relative time in the geologic record	CP

April 10	Grand Canyon - uplift and canyon incision	CP
April 12	Zion - weathering, erosion and the role of fractures	CP
April 14*	Arches, Canyonlands - arches, buttes and mesas	CP
April 17	Bryce Canyon and introduction to tectonics	CP
April 19	Hawaii Volcanoes National Park	VP
April 21*	Hotspots and the Hawaiian volcanic chain	VP
April 22	Local field trip (1:00-3:00 p.m.)	
April 24	Cascade volcanoes and the Pacific Ring of Fire	VP
April 26	Exam 1	
April 28	Cascade volcanoes (Mt. St. Helens, Crater Lake)	VP
May 1	Cascade volcanoes (Lassen, Rainier)	VP
May 3	Seafloor spreading and convergent margins (Olympic)	SN
May 5*	Yosemite and the Sierra Nevada	SN
May 8	Yosemite and the Sierra Nevada	SN
May 10	Yellowstone - continental hot spot	VP
May 12*	Yellowstone - geysers and hydrothermal activity	VP
May 15	The Rocky Mountains (Rocky Mountain)	RM
May 17	The Rocky Mountains (Grand Teton)	RM
May 19*	The Appalachian Mountains (Acadia, Great Smoky, Shenandoah)	CM
May 22	Exam 2	
May 24	The Appalachian Mountains	CM
May 26	Joshua Tree National Park	BR
May 29	No Class -- Memorial Day	
May 31	Death Valley NP and the Basin and Range	BR
June 2*	Death Valley NP	BR
Saturday June 3	Day trip to Joshua Tree National Park	
June 5	Glaciers and ice ages (Waterton-Glacier, Glacier Bay)	CM
June 7	Alaska parks (Denali, Katmai)	CM
June 9	Assembling western North America	

Final exam: Wednesday, June 14; 3:00-6:00 p.m.

* Homework due. Homework will be posted on the Monday before the due date.

Modules: CP=Colorado Plateau, VP=Volcanic Parks, SN=Sierra Nevada, RM=Rocky Mtns, BR=Basin and Range, CM=Collisional Mtns and Terranes