

GEOS 220: Field Experiences

MWF 2:50-3:50; T 8:30-11:20, Julian 226

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Office Hours: by appointment

COURSE MATERIALS:

There are NO required texts for this course. Some recommended reference texts are as follows:

Highly recommended:

Geology in the Field by Robert Compton. A classic. The field geologist's Bible for nearly half a century. Every field geologist in the world owns this book, known simply as "Compton."

Essentials of Geology and/or *Earth: Portrait of a Planet*, both by Stephen Marshak.

Also recommended:

Sedimentary Rocks in the Field: A Color Guide by Derrick Stow. Soon to become a classic? I don't know, but it's pretty good.

The MacMillan Field Guide to Geological Structures by John L. Roberts. Now out of print, but you may still be able to find a used copy cheap somewhere (Amazon U.K.?).

Geological Structures & Maps by G. M. Bennison and K. A. Moseley. A good general guide to topographic and geologic map interpretation and construction.

Geology of Death Valley: Landforms, Crustal Extension, Geologic History, Road Guides, by M. B. Miller and L. A. Wright. A fantastic summary of Death Valley Geology. Available at Park Headquarters.

OTHER REQUIREMENTS:

Course Fee: There is a fee associated with this course to help defray travel expenses for our field trip over spring break. The exact amount is contingent upon airfare and vehicle rental costs. I will announce the final amount well in advance of our departure, and it will then be deducted from your student accounts.

Field trip: As you all should be aware, there is a mandatory Spring Break field trip associated with this course. We will discuss trip logistics well in advance of our departure, but be aware that we will be in the field for 8 full days over break. We will be camping for the duration of the trip in primitive campsites (i.e. no shower, toilet facilities, picnic tables, etc.). Be prepared for cold weather, rain, snow, sleet, hail, or meteors. I will compile an equipment list prior to our departure, and we will discuss trip logistics in detail the week before we leave.

Additional equipment: Compasses and rock hammers are available to borrow for the duration of the trip from the Geoscience department. All other items field geological items (notebooks, hand lenses, etc.) must be purchased, either from us or from another vendor, in advance of the trip. You are responsible for these costs.

THINGS I EXPECT YOU TO KNOW:

You have all had GEOL 110 (now GEOS 110) as a prerequisite to this course. I expect you to know all of the major concepts presented to you in this course, and will teach this class as though you do. Specific topics that you may need to review are:

- 1) Sedimentary Rocks (Sections 5.4-5.7 in Chapter 5 of Marshak)
- 2) Crustal Deformation (Chapter 9 in Marshak- pay particular attention to section 9.5 and 9.6)
- 3) Volcanic products (Section 7.2 in Chapter 7 of Marshak)
- 4) Plate tectonics (Chapter 2 in Marshak)

There is further information about these topics in Compton, as well. ***I will be testing you*** on your basic mastery of these topics (see below), so know them well!!

COURSE OUTLINE AND ASSESSMENT:

This class consists of four main components, homework and lab exercises (30% of grade), student presentations (5% of grade), quiz(zes) (5% of grade), and your final maps and report based upon our fieldwork in southern California (60% of grade). There will be NO CURVE- if you fail to complete one or more components of the course your grade will reflect that as follows:

Grading scale:

A	93-100%	C	76-74%
A-	92-90%	C-	73-70%
B+	89-87%	D+	69-67%
B	86-84%	D	66-64%
B-	83-80%	D-	63-60%
C+	79-77%	F	<60%

The moral: **complete all assignments!!** Late assignments will be marked down 10% for every week overdue.

In order to receive a “W” for this course, you must receive a C or better on all writing assignments, and a C- or better in the class.

Homework and lab assignments (15%):

All lecture and lab components of the course will be conducted prior to our spring break trip. There will be no additional assignments after the trip—we will be working on our final reports and maps ONLY. Lab exercises will be handed out on Friday and should be completed by the following Friday (in some cases they will be due the same day). See the attached schedule for a list of subjects to be covered (subject to change at my discretion).

Student Presentations/Short writing assignments (20%):

One of the most important things to do before a field expedition is to acquaint yourself with the regional geology. To accomplish this, I have provided a PDF of the premier field guide to the Death Valley region (Wernicke et al., 1989). You will split into groups of two, and each group is responsible for one chapter in the field guide. *Everyone* is responsible for reading and understanding the overview on pages 1-12.

We will discuss pairings for these groups in class. Your assignment will be to:

- 1) Prepare a Google Earth Tour of the chapter you’ve chosen using GE Placemarks—positioned to yield the correct view;
- 2) Present your tour to the class during the week indicated on the course schedule (last page of the syllabus). Presentations are to be 30 minutes long for each group.

Short writing assignments:

- 1) Each member of the group will pick one stop from their day and prepare a detailed summary of what can be seen there, its significance, and its relationship to the regional geology, written for the general public. Include illustrations where appropriate.
- 2) Some components of the final report (i.e. rock descriptions) will be begun prior to departure.
- 3) I will assign several other short writing assignments over the course of the first part of the semester.

More detailed information will be provided about these assignments in separate handouts.

Quiz(zes) (5%):

There will be at least one quiz on topics that you should already have well in hand (see “Things I expect you to know” above). *Do the suggested review reading!* There may be additional quizzes as needed.

Final Report and drafts (60%):

The final report and maps that you produce from our fieldwork are the ENTIRE POINT OF THIS CLASS. Anyone that does not complete this component of the course in its entirety will receive a failing grade. Your final report will be graded on neatness, clarity of presentation, style, referencing, and content. A complete explanation of grading basis will be handed out later in the course. See the attached schedule for draft, reference lists, and final due dates.

COURSE SCHEDULE (Subject to change):

Below is a list of topics to be covered in this course and when we will cover them. Although lecture and lab content prior to the trip is subject to change, due dates are *firm*. All lab assignments are due the following Tuesday unless otherwise announced.

Week of	Topic	Activity
Jan 30-Feb 3	Introduction, topographic maps	Topographic maps
Feb 6-10	Geologic mapping on a topographic base	Geologic mapping
Feb 13-17	Introduction to Death Valley Geology	Preliminary Mapping Field trip stop writeup due Friday
Feb 20-24	Student presentations	Student presentations
Feb 27-Mar 2	Death Valley Stratigraphy	Rock description
Mar 5-9	Taking field notes	Field trip (location TBA) Rock Descriptions due Friday
Mar 12-16	Collecting data	Pace and compass map
Mar 19-23	Final trip planning	Departure day
SPRING BREAK FIELD TRIP: MARCH 23-APRIL 1		
Apr 2-6	Map and cross-section compilation	Map and cross-section compilation Reference lists due Friday, April 6
Apr 9-13	Map and cross-section compilation	Using ArcGIS and/or Adobe Illustrator
Apr 16-20	Map and cross-section compilation	First drafts due Monday, April 16
Apr 23-27	Constructing stratigraphic columns	Second drafts due Monday, April 30
Apr 30-May 4	Writing reports	Writing reports
May 7-9	Writing reports	Final reports due Wednesday, May 9