GEOS 220: Field Experiences

TR 12:40-2:10; R 2:20-3:50, Julian 226

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Office Hours: by appointment using link to my calendar on Moodle

COURSE MATERIALS:

There are no required texts for this course. I will provide some reading material. You will also need to research and read the primary literature for your final papers. Some recommended general 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. Nearly every old 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 Dorrick 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.?).

An Introduction to Geological Structures & Maps by G. M. Bennison, P. A. Olver, 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.

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, and/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 are available to borrow for the duration of the trip from the Geoscience department. All other field geological items (notebooks, hammers, 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 at least had GEOS 110 as a prerequisite to this course. I expect you to know all of the major concepts from that course, and will teach this class as though you do. Specific topics that you may need to review:

1) Sedimentary Rocks (Chapter 6 in Marshak)
2) Crustal Deformation (Chapter 9 in Marshak- pay particular attention to faults and folds)
3) Volcanic products (Chapter 5 of Marshak- pay particular attention to Sections 5.2-5.3)
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 is no curve. If you fail to complete one or more components of the course your grade will reflect that.

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%

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 only on our final reports and maps. Lab exercises will be handed out on Thursday and should be completed by the following Thursday (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 on Moodle (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 arrange groups in class. Your assignment will be to:

1) Prepare a Google Earth tour of the chapter your group has 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. There will be time for questions.

Other 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 written prior to our departure.
3) I may 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, maps, and sections 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 comprehensive grading rubric will be handed out later in the course. See the attached schedule for draft, reference lists, and final paper 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 weekly topics are subject to change, due dates are firm. All lab assignments are due the following Tuesday unless otherwise announced.

Week of	Topic	Activity
Jan 31	Introduction, topographic maps	Topographic maps
Feb 7	Geologic mapping on a topographic base	Geologic mapping
Feb 14	Introduction to Death Valley Geology	Intro to Preliminary Mapping **Field trip stop writeup due Thursday**
Feb 21	Student presentations	Student presentations
Feb 28	Death Valley Stratigraphy	Rock descriptions
Mar 7	Taking field notes	Field trip (location TBA) **Rock Descriptions due Friday**
Mar 14	Collecting data	Pace and compass mapping
Mar 21	Preliminary Mapping/planning	Preliminary Mapping/planning
	SPRING BREAK FIELD TRIP: MARCH 25-APRIL 2	
Apr 4	Map and cross-section compilation	Map and cross-section compilation **Reference lists due Thursday, April 6**
Apr 11	Map and cross-section compilation	Using ArcGIS and/or Adobe Illustrator
Apr 18	Constructing stratigraphic columns	**Map and section drafts due Thursday, April 20**
Apr 25	Writing workshop	Writing workshop
May 2	Writing workshop	**Paper drafts due Thursday, May 4**
May 9	Writing workshop	Writing workshop

Final reports due Tuesday, May 16, 4:00 pm