

Geologic Field Experiences-UT

Instructor

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<http://www.depauw.edu/acad/geosciences/>

Class

1:40-2:40 pm MWF Julian 226
1:40-3:30 pm Th (LAB) Julian 226

Office Hours

Stop in or by appointment.

Texts

Geological Structures & Maps,
Bennison & Moseley, (Arnold, 7th ed, 2003).
Sedimentary Rocks in the Field,
Stow, D., (Elsevier, 2005).

Recommended Texts

Geology of Utah's Parks & Monuments,
Sprinkel, Chidsey, & Anderson (eds),
(UT Geol Assoc, Publication 28, 2003).

or

*Geology Unfolded: An Illustrated Guide to the Geology
of Utah's National Parks*,
Morris, Ritter, & Laycock, (2010).

**Course Fee**

\$250, payable the second week of the semester. This will be used for transportation and to defray lodging expenses associated with fieldwork. Students will purchase their own meals while on field trips.

Course Materials

hardback field book*, acid bottle*, 10x hand lens*,
C-Thru™ 6" ruler/protractor combo*, colored pencils,
mech. pencil (0.5mm, 2H), pen, eraser, clipboard (covered is best)
and appropriate field attire (inc. boots). Rock hammer, calculator,
digital camera, small personal stapler, & USB flash drive also are useful.

**The Department has some available at cost.*

COURSE GOALS

To use observations, measurements, and the logic of science to interpret the origin and evolution of rock outcrops in the field. Specifically, students will learn how to make and record fundamental observations in the field. For example, students will learn to recognize and interpret basic rock types, geologic structures, and topographic landforms in the field, and to use a Brunton compass to take basic field measurements like strike, dip, plunge, and bearing. They also will learn to locate themselves on a topographic map and to record measured geologic field data on this map. From this information, students should be able to use the scientific method to reason through observational and empirical data to formulate appropriate questions and hypothetical solutions. Students will visualize their data and interpretations as geologic maps and geologic cross sections. Lastly, students will learn to describe their field observations/measurements, their interpreted geologic maps and cross sections, and research from the primary literature in a well organized and well written geologic report.

This syllabus is meant to provide an outline for the general flow of the course. At my discretion, I will add or omit topics and/or modify the timetable.

COURSE ORGANIZATION

Our course is effectively organized into two sections relative to our Spring Break trip to Utah. Before our Spring Break trip, lecture and lab activities will focus on developing skills/knowledge that we will be using in the field over Spring Break (e.g., background information about the field area, the stratigraphy in our field area, how to create a geologic map, etc.). Activities will consist of Apple Keynote computer-based lectures, hands-on activities with rock specimens from the field area, and Google Earth pre-trip mapping, to name a few. We will also use class time to discuss the do's and don'ts of organizing and writing professional quality geologic reports, and to learn how to use Adobe Illustrator, Google Earth, and other software packages to construct our maps and cross sections. **Please take detailed notes and ask questions** about any material that you need clarified. Our post-trip activities will mainly focus on working on our geologic maps & cross sections and on our geologic reports. There will be no exams in this course.

Our **Spring Break trip to Utah** is the main field trip for this course (perhaps supplemented by other smaller trips). If you cannot go on this trip for any reason, you will need to drop this course. **Please check with your other instructors ASAP to determine if there are any conflicts with scheduled trips.** An ~\$250 course fee (the exact value will be determined once our class list and expenses are finalized), payable the second week of the semester, will be used for transportation and to defray lodging expenses associated with fieldwork. Students will purchase their own meals while on field trips.

Cell phones should not be used during class (i.e., no text messaging; *you may certainly answer emergency calls*). **Laptops** should be used for classroom purposes only (not to surf the Internet, chat with friends, or check email). You also may use the Geosciences Mac computer lab.

GRADES

Final grades will be based on the assignments shown in the table below. **All materials to be turned in for a grade must be clearly written/typed and stapled; late/messy/unstapled assignments will not be accepted and will receive a "0".** Extensions will not be given unless there is a documented emergency or unless we have arranged an extension in advance because of exceptional circumstances.

Note that grades are based on a weighted average, not a straight average based on points. I calculate your grades automatically and can provide you up-to-date information on your grades at any time. It is important not to wait until the last month of class to become concerned about your grade.

Percent of Final Grade		Grading Scale*
B&M Map Exercises	16.0%	A >90%
Pre-Field Trip Strat Column & Desc	12.0%	B 80-89%
DePauw Nature Park Map	10.0%	C 70-79%
Pre-Field Trip Geologic Maps	12.0%	D 60-69%
Utah Field Trip Report, Maps, & Sections	50.0%	F <60%
*I reserve the right to adjust the grading scale up slightly (benefiting you!), if warranted by the class grade distribution.		

ACADEMIC INTEGRITY

Any attempt to gain an unfair advantage over other students in the class will be handled in accordance with established University procedures as described in the Academic Handbook:

[Academic Handbook section on Academic Dishonesty:](http://www.depauw.edu/univ/handbooks/dpubandbooks.asp?ID=101&parentid=100)

[http://www.depauw.edu/univ/handbooks/dpubandbooks.asp?](http://www.depauw.edu/univ/handbooks/dpubandbooks.asp?ID=101&parentid=100)

[ID=101&parentid=100](http://www.depauw.edu/univ/handbooks/dpubandbooks.asp?ID=101&parentid=100)

Note: From the section on Types of Academic Dishonesty, “Students are responsible for knowing the academic integrity policy and may not use ignorance of the policy as an excuse for dishonesty.”

[Writing Center Information Regarding Plagiarism:](http://www.depauw.edu/admin/arc/W-center/plag.asp)

<http://www.depauw.edu/admin/arc/W-center/plag.asp>

ATTENDANCE

Attendance (and participation) is required and will be monitored. Should you know that you will be absent (e.g., health issue regarding yourself or immediate family, athletic obligation, etc), please see me in advance (see the Student Handbook for the University policy on attendance). **If you are ill, please do not come to class (wait until you are without a fever for 24 hrs without medication).** Contact me via email before class, and we’ll make arrangements to make up assignments.

You are expected to be in class the day before and the day after vacation.

SELECTED LIST OF OTHER USEFUL BOOKS: (also see <http://libguides.depauw.edu/geosciences>)

Books on Utah

- Baars, D.L., 1983, The Colorado Plateau: A geologic history, Univ. of New Mexico Press, Albuquerque, NM.
- Baars, D.L., 1989, Canyonlands country, Cañon Publishers, Lawrence, KS.
- Baars, D. L., 2002, A traveler's guide to the geology of the Colorado Plateau, Salt Lake City, Univ. of Utah Press.
- Barnes, F.A., 1993, Geology of the Moab area, Canyon Country Publications.
- Chronic, H., 2000, Roadside geology of Utah, Mountain Press, Missoula, MT.
- Chronic, H., 2004, Pages of stone: Geology of the Grand Canyon and plateau country national parks and monuments, Seattle, WA, Mountaineers Books.
- Davis, G. H., 1999, Structural geology of the Colorado Plateau region of southern Utah, with special emphasis on deformation bands, Boulder, CO, Geological Society of America.
- Fillmore, R., 2000, The geology of the parks, monuments, and wildlands of southern Utah, Salt Lake City, Univ. of Utah Press.
- Grand Staircase-Escalante National Monument Science Symposium, 1997, Learning from the land: Grand Staircase-Escalante National Monument Science Symposium proceedings: November 4-5, 1997, Southern Utah Univ., Salt Lake City, UT, U.S. Dept. of the Interior, Bureau of Land Management.
- Hintze, L. F., 1988, Geologic history of Utah, Provo, UT, Brigham Young University, Dept. of Geology.
- Laccolith complexes of southeastern Utah: Time of emplacement and tectonic setting, 1998, workshop proceedings, Washington, U.S. G.P.O., Denver, CO, U.S. Geological Survey, Information Services.
- Lohman, S.W., 1990, The geologic story of Canyonlands National Park, Denver, CO, U.S. Geologic Survey, Books and Open-File Reports Section.
- Stokes, W.L., 1986, Geology of Utah, UT Museum of Nat. Hist. and UT Geol. & Min. Survey.

Books on geologic field mapping & report writing (many available)

- Barnes, J., 1995, Basic geological mapping, Wiley.
- Compton, R. R., 1985, Geology in the field, New York, Wiley.
- Freeman, T., 1999, Procedures in field geology, Blackwell Science.

Books on identification & description of sedimentary rocks (many available)

Feedback:

I usually need at minimum of a week to return work (perhaps longer for large assignments). I try to write detailed comments on the papers that I return to you. I will “go over” graded materials with you as needed. Please ask questions in class or stop by my office if a concept is not clear or if you have a question on how I graded your work.

Additionally, you need to give me feedback about how the course is going. It is important that you “rein me in” if I go too fast or if I haven’t explained something well enough. **Ask questions!!!**

ORDER OF TOPICS

Week Starting	Topics (Last Day to Withdraw 3/18)	Lab
1: 1/31	Syllabus/Course Organization What are geologic maps & cross sections? How to use Adobe Illustrator How to use library resources (Library Staff)	Strike/Dip/Apparent Dip/ Structure Contours (B&M, 1-10, Maps 1, 4, 5)-M (Stow, 12-27)
2: 2/7	How to interpret geologic map patterns (e.g., using structure contours, rule of V's, block diagram models, 3-pt problems)	3-Pt Problems (B&M, 16-20, Maps 6,8) Folds (B&M, 28-40, Maps 11,12) Faults (B&M, 50-57, Map 17)-M
3: 2/14	How to describe sedimentary rocks	Pre-Field Trip Stratigraphic Column & Descriptions (Stow)
4: 2/21	How to describe sedimentary rocks (cont) How to organize and write scientific reports	Pre-Field Trip Stratigraphic Column & Descriptions-M (cont) (Stow)
5: 2/28	How to map geologic features and formations How to locate yourself on a topographic map	DePauw Nature Park Geologic Map-M (Google Earth)
6: 3/7	How to measure geologic features using the Brunton compass How to use a GPS to locate yourself How to take field notes	Pre-Field Trip Geologic Maps (San Rafael Swell & Henry Mts) (Google Earth)
7: 3/14	Geologic & Tectonic History of Utah	Pre-Field Trip Geologic Maps (San Rafael Swell & Henry Mts)-F (Google Earth)
8: 3/21	Spring Break Trip-UTAH 3/19-3/26	
9: 3/28	Utah Maps/Sections Faculty-Student Individual Meetings	Utah Maps/Sections
10: 4/4	Utah Maps/Sections Faculty-Student Individual Meetings	Utah Maps/Sections
11: 4/11	Utah Maps/Sections Faculty-Student Individual Meetings	San Rafael Swell & Henry Mts Maps & Cross Sections DRAFT
12: 4/18	Utah Report Faculty-Student Individual Meetings	Utah Report
13: 4/25	Utah Report Faculty-Student Individual Meetings	Utah Report
14: 5/2	Utah Report Faculty-Student Individual Meetings	Final Utah Report, Maps, Sections, & Field Notes-F
15: 5/9	Putnam County Geology Putnam County Geology	TBA Cataract Falls? Vermillion Falls? West Walnut?
No final exam.		
Note: These topics and times are subject to change.		
All students who are 21 years of age are asked to become certified for driving University vehicles on field trips. Please visit http://www.depauw.edu/student/safety/driversafety.asp to find out about driver certification classes.		

FAQ:

Are lecture notes from the slides provided? No. Experience has shown that students do better in class when they are engaged in the note-taking process, so I want you to take your own notes during lecture.

Should we copy all the text on the slides? No. It is *far better* to listen to me and take notes than to copy the slides... Sometimes text on slides is really just to trigger me on a topic and not something to be committed to your notes. In addition, I commonly go more in-depth than what is on the slides, and I expect you to know that detail for the exams.