

# Geologic Field Experiences-UT

## Syllabus

### Instructor

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<http://www.depauw.edu/academics/departments-programs/geosciences/>

### Class

2:50-3:50 pm MWF (Julian 226)

### Office Hours

10:30-11:30 am MWF *other times: stop in or by appt.*

### Texts

Geological Structures & Maps

Bennison, Olver, & Moseley, 2011, 8th ed.,  
Hodder Education **(REQUIRED)**

Geology of Utah's Parks & Monuments,  
Sprinkel, Chidsey, & Anderson (eds), 2010,  
3rd ed., UT Geol Assoc

**(REQUIRED/HIGHLY RECOMMENDED/2003 edition On Reserve)**

Geological Field Techniques

Coe, 2010, 1st ed., Wiley-Blackwell

**(REQUIRED/HIGHLY RECOMMENDED/On Reserve)**

Communicating Rocks

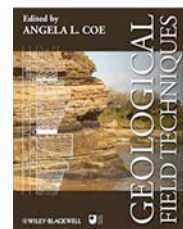
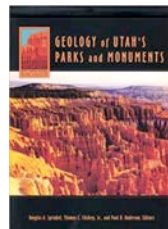
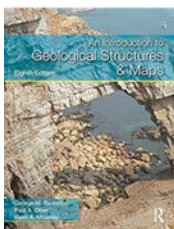
Copeland, 2012, 1st ed., Pearson

**(RECOMMENDED/On Reserve)**

### Course Fee

**\$250** (with \$200 non-refundable deposit billed to student accounts during first week of classes)

will be used to defray transportation & lodging expenses associated with fieldwork. Students will be responsible for their own meals while on field trips.



### Course Materials

hardback field book\*, acid bottle\*, 10x hand lens\*,  
C-Thru™ 6" ruler/protractor\*, mech. pencil (0.5mm, 2H), pen, eraser,  
clipboard (+/- covered) and appropriate field attire (inc. boots).  
*Rock hammer, colored pencils, 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 distribution, 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 compass to take basic field measurements like strike, dip, plunge, and bearing. They also will learn to locate themselves on a topographic map/aerial photograph/etc. and to record measured geologic field data on this base 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 information obtained from the primary literature in a well organized and well written geologic report(s).

*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.*

## DESCRIPTION

Our course is effectively organized into two sections relative to our Spring Break trip to Utah.

Our pre-trip 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/GDME pre-trip mapping, to name a few. We will also use class time to discuss the do's and don't's of organizing and writing professional quality geologic reports, and to learn how to use Adobe Illustrator, Google Earth, GDME, 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. We'll spend class time discussing specific techniques that will help in these endeavors as well as working one-to-one to address individual issues. 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.

Course fee: **\$250** (with a \$200 non-refundable deposit billed to student accounts during first week of classes), will be used to defray transportation & lodging expenses associated with fieldwork. Students will be responsible for their own meals while on field trips.



## GRADES

The basis for final grades is described in the table below. All materials to be turned in for a grade must be turned in on time, clearly written (or typed), and stapled in order. Work that fails to meet these criteria will not be accepted and will receive a "0". *Extensions will not be given unless there is a documented emergency or unless we have made arrangements in advance because of exceptional circumstances.*

Participation. Participation/engagement grades for this course will be based on a "standard" - "sub-standard" system. Everyone starts out with a "standard" grade, and I expect that most of you will finish the semester with this grade. A "standard" grade means you are attending class consistently, and you are participating in a reasonable way during most class sessions. If I judge your participation to be falling into the "sub-standard" range (e.g., excessive absences/tardiness, consistent lack of preparation or participation in activities, electronic distraction, sleeping/lack of attention, frequently getting up in class, etc.), I will explain the issue to you without penalty and will work with you to develop a plan for improvement. If an issue persists, I will explain the issue again and will assign a sub-standard participation grade. Each such sub-standard grade will result in lowering your final course grade by one percentage point.

## W CERTIFICATION

Students must earn a final course grade of 70% or better.

Percent of Final Grade		Grading Scale*	
BOM Map Exercises	10%	88% to 100.0% = A- to A	(90%-100.0%)
Pre-Field Trip Strat Column & Desc	05%	78% to 87.9% = B- to B+	(80%-89.9%)
Pre-Field Trip Geologic Maps	05%	68% to 77.9% = C- to C+	(70%-79.9%)
Field Notes	05%	58% to 67.9% = D- to D+	(60%-69.9%)
Post-Field Trip Geologic Maps/Sections	05%	00% to 57.9% = F	(00%-59.9%)
Draft - Utah Stratigraphy	05%		
Draft - Utah Geologic/Tectonic History	05%		
Final - Utah Field Trip Report	50%		
Engagement/Field Work/Quizzes	10%		
<i>Tentative percentages &amp; specific assignments subject to change.</i>			

## KEYS TO SUCCESS IN THIS COURSE

1. **Read the Assigned Materials** in a distraction-free environment. As you're reading, carefully note any questions that you have.
2. **Take Good Notes.** Students with complete notes seem to do better in class. If possible, print out available lecture slides before class and annotate them from the lecture/discussion (including sketches from the whiteboard). Rewriting your notes will make them more legible and orderly, plus it will help you focus on areas that are still unclear. Be careful of falling into "TV-watching mode", as it is easy to look at the pictures and not take down any notes.
3. **Ask Questions.** The only "bad" question is one that is unasked. It is essential to ask questions to clarify any concepts that you do not understand. Please do not be too shy, embarrassed, intimidated, afraid, etc. to ask questions...especially in the field!
4. **Know the Terms** for each topic (use available glossaries, online resources, etc. to help you). If I use a term that you don't understand, please ask me to define it.
5. **Do the Assigned Activities in a timely manner.** It is important that everyone maintain good study habits by regularly working with the assigned material. Procrastination and cramming at the last minute just don't work for most of us...it is best to work with the material regularly as we go along so that you don't fall behind. If you don't understand something, please ask.
6. **Check out the Internet.** Use a search engine to find reputable web sites of interest that pertain to the material being covered.
7. **Engage in the Field.** Be curious and observant. Think and interpret as you map.
8. **Take Good Field Notes.** Not only will you be turning these in for a grade, but you'll also benefit from reading these while you are working back on campus.



## SELECTED LIST OF OTHER USEFUL BOOKS:

(also see <http://libguides.depauw.edu/geosciences>)

### Selected Books on Utah (several are on reserve in Prevo)

- Baars, D.L., 1983, The Colorado Plateau: A geologic history, Univ. of New Mexico Press, 279 p.
- Baars, D.L., 1989, Canyonlands country, Cañon Publishers.
- Baars, D. L., 2002, A traveler's guide to the geology of the Colorado Plateau, Univ. of Utah Press, 294 p.
- Barnes, F.A., 1993, Geology of the Moab area, Canyon Country Publications, 264 p.
- Chronic, H., 2000, Roadside geology of Utah, Mountain Press, 325 p.
- Chronic, H., 2004, Pages of stone: Geology of the Grand Canyon and plateau country national parks and monuments, Mountaineers Books, 173 p.
- 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, Univ. of Utah Press, 268 p.
- 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, 181 p.
- 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.
- Morris, T.H., Ritter, S.M., and Laycock, D.P., 2010, Geology Unfolded, BYU Press, 72 p.
- Morris, T.H., Spiel, K.G., Cook, P.S., and Bonner, H.M., 2016, Landscapes of Utah's Geologic Past, BYU Press, 80 p.
- Stokes, W.L., 1986, Geology of Utah, UT Museum of Nat. Hist. and UT Geol. & Min. Survey, 280 p.

### Physical geology/geologic landforms textbooks (many are in Prevo).

- Wyckoff, J., 1999, Reading the Earth, Adastr West, 352 p.

### Books on geoscience writing

- Copeland, P., 2012, Communicating Rocks, Pearson. 149 p.

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

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

## TENTATIVE ORDER OF TOPICS

Week Starting	Topics (Last Day to Withdraw 3/20)	Assignments
01: 01/27	Syllabus/Course organization Introducing geologic maps Exploring Utah field area - Google Earth VR	BOM - Ch 1-2, Map 2 Coe - Ch 10
02: 02/03	Interpreting geologic map patterns (e.g., strike/dip, structure contours, rule of V's, 3-pt problems, etc.) Using Adobe Illustrator	BOM - Ch 3, Maps 4, 5 BOM - Ch 4, Maps 6, 8
03: 02/10	Using Adobe Illustrator Describing sedimentary rocks & constructing stratigraphic columns	Coe - Ch 6, A6/SCA Stratigraphic Desc/Column
04: 02/17	Communicating about rocks - pitfalls Communicating about rocks - topic sentences & extended outlines	Coe - Ch 6, A6/SCA Stratigraphic Desc/Column Draft
05: 02/24	Using Google Earth to construct geologic maps Using GMDE to construct geologic maps	SCA Pre-Field Trip Geologic Map
06: 03/02	Measuring the orientation of geologic features - Brunton Measuring the orientation of geologic features - phones	Coe - Ch 2, 8/SCA Pre-Field Trip Geologic Map Draft
07: 03/09	Interpreting the geologic & tectonic history of Utah Taking field notes Locating yourself in the field	SCA Coe - Ch 4 Coe - Ch 10
08: 03/16	<b>Spring Break Trip-UTAH*</b> 3/20 - 3/28	
09: 03/23	Constructing topographic profiles & cross sections Faculty-Student Individual Meetings	Field Trip Notes Utah Maps/Sections
10: 03/30	Constructing topographic profiles & cross sections Faculty-Student Individual Meetings	Utah Maps/Sections
11: 04/06	Constructing topographic profiles & cross sections Faculty-Student Individual Meetings	Utah Maps/Sections Draft
12: 04/13	Organizing and writing scientific reports Faculty-Student Individual Meetings	Utah Stratigraphy Draft
13: 04/20	Organizing and writing scientific reports Faculty-Student Individual Meetings	Utah Geologic/Tectonic History Draft
14: 04/27	Organizing and writing scientific reports Faculty-Student Individual Meetings	Utah Report - Draft
15: 05/04	Organizing and writing scientific reports Faculty-Student Individual Meetings	Utah Report - Final
<b>No final exam.</b>		
<b>Note: These topics are subject to change. *You must be present to get full credit.</b>		
Students willing to become certified for driving University vehicles should visit <a href="http://www.depauw.edu/studentlife/campus-safety/publicsafety/education-and-awareness/drivers-safety/">http://www.depauw.edu/studentlife/campus-safety/publicsafety/education-and-awareness/drivers-safety/</a> to find out about driver certification.		

**FAQ:**

**Are lecture notes from the slides provided?** PDF's of the lecture notes will be available in Moodle. Please bring printouts to class, so that you can annotate them (I commonly go more in-depth than what is on the slides, so you will be responsible for knowing that material as well). Please note that if I post notes from the last time the course was offered, I will post any revised PDF's of the lecture notes relatively soon after the lecture.

**When will get feedback on our graded work?** 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 you don't understand something well enough. Ask questions!!!

**Are there other useful online resources?**

<https://www.usna.edu/Users/oceano/pguth/website/microdem/microdem.htm>  
<http://elasticterrain.xyz>  
<http://www.gpsvisualizer.com>  
<https://www.google.com/earth/desktop/>  
<https://basemap.nationalmap.gov/arcgis/rest/services/USGSTopo/MapServer/>

# Policy Page

## ADA STATEMENT

It is the policy and practice of DePauw University to provide reasonable accommodations for students with properly documented disabilities. Written notification from Student Disability Services is required. If you are eligible to receive an accommodation and would like to request it for this course, please contact Student Disability Services. Allow one week advance notice to ensure enough time for reasonable accommodations to be made. Otherwise, it is not guaranteed that the accommodation can be provided on a timely basis. Accommodations are not retroactive. Students who have questions about Student Disability Services or who have, or think they may have, a disability (psychiatric, attentional, learning, vision, hearing, physical, medical, etc.) are invited to contact Student Disability Services for a confidential discussion in Union Building Suite 200 or by phone at 658-6267.

## ATTENDANCE

Regular and on-time attendance is expected and monitored (see the Student Handbook <https://www.depauw.edu/handbooks/academic/>). As stated in the Student Handbook, excessive absences can be grounds for being dismissed from the course. In addition, it has been my experience that learning comprehension improves dramatically when students are present to listen to lectures, to ask questions, and to discuss the material in the classroom setting. In addition, some activities (e.g., field work) require attendance to receive credit. Should you know that you will be absent (e.g., health issue regarding yourself or immediate family, athletic obligation, etc), please contact me in advance (or ASAP afterwards) to make arrangements about assignments.

## 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 section <http://www.depauw.edu/handbooks/academic/> on Academic Integrity.

DePauw Academic Resources on Academic Integrity  
<http://www.depauw.edu/academics/academic-resources/academic-integrity/>

Writing Center Information on Plagiarism:

<http://www.depauw.edu/academics/academic-resources/academic-resource-center/w-center/w-center-handouts/>

## CELL PHONE/COMPUTER/SMART DEVICE USE

Before class begins, turn off your cell phone (or set it to vibrate) and put it away (face down on top of the table or in your backpack...not in the table or on your person). Do not check or send voicemail or text messages during class, and do not leave class to check or send messages unless 1) you have an emergency (inform your instructor prior to class starting of special circumstances involving a personal emergency situation that would require you to use your phone when class is in session) or 2) are on an instructor-designated break. In other words, do not use your cell phone in class for any reason at any time unless you have consulted with the course instructor. I will have my cell phone on in the case of a campus emergency.

If you have a cell phone/smartwatch on your person or on your desk/table during an exam without the instructor's permission, you will receive a 0 on the exam, and you will automatically be considered in violation of DePauw's academic integrity policy on cheating due to unauthorized use of a cell phone/smartwatch. You may not take your cell phone/smartwatch with you on bathroom breaks during exams.

Please read the following: <http://www.insidehighered.com/blogs/just-visiting/open-letter-incoming-freshmen>

Laptops, tablets, smartwatches, and other electronic devices are not allowed to be used in the classroom except for activities directly related to our course as specified by your instructor (e.g., do not check or send emails, chats, or texts, do not use your web browser except for course-sanctioned activities, etc.). Quit all programs not specifically designated by your instructor (not only reducing temptation, but also helping your computer run more efficiently).

*Violating the cell phone/computer/smart device use policy is one way students may be considered not engaged/participating in course activities (see the Grades discussion on participation above).*

# Policy Page

## CLASSROOM BEHAVIOR

- **Early is on time, and on time is late.** (especially on days with field activities).
- **Respect everyone.** (yourself, your peers, and your instructor).
- **Listen and contribute.** Lecture and discussion portions of our class can quickly morph to lecture only if you are not an active and contributing participant in class.
- **Work to the best of your ability.** True learning is hard work and is constructed and nurtured by you (not simply transferred from the instructor). A strong work ethic will not only serve you well in this course, but in life in general. Do not settle for less than your best effort.
- **Be aware of consequences (positive & negative).** If you make good decisions (e.g., reading the course materials, taking notes, asking questions, working hard, etc.), you will likely experience good consequences such as enhanced understanding of geoscience processes, improved grades, and general success in life. Conversely, poor decisions (e.g., waiting to cram right before an exam or assignment, pulling an “all-nighter” and coming to class exhausted, relying on energy drinks or other substances, distracting yourself or others with cell phones or laptops, etc.) typically have negative consequences that cause your understanding of course content to suffer.
- **Consider the classroom your workplace.** Once you step inside the classroom, commit yourself to learning as much as you can during that time. Do not routinely get up during class to take care of personal needs (e.g., bathroom breaks, social networking, etc.). Please address these needs during the break between classes. If an emergency occurs, please feel free to leave the classroom to address it.

## AUDIO/VISUAL POLICY

- No video, audio, or still picture recordings are allowed during class without the instructor's permission.
- No video recordings, still picture, or other means of duplication (e.g., xeroxing) of homework assignments, labs, exams, etc. are allowed without the instructor's permission.
- ADA accommodations pertaining to recordings of lectures for taking notes are addressed by the instructor providing handouts of lecture slides/materials.