

Map Interpretation

Instructor

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

Class

Julian 201
10:20-11:20 am MWF (lecture)
8:00-9:50 am TH (lab)

Office Hours

3:00-3:50 pm MWF, stop by, or by appt
(please knock on my door if it is closed)

Required Texts

[Map Interpretation of Topographic Landforms Using Google Earth](#),
Wilkerson, (PDF DRAFT - Moodle).
[An Introduction to Geological Structures & Maps](#),
Bennison, Olver, & Moseley, (2011, 8th ed, Hodder Education).

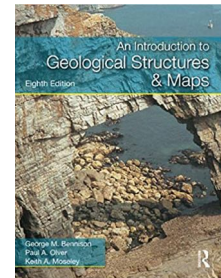
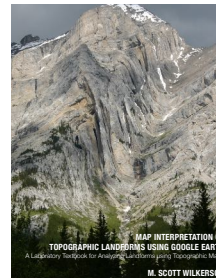
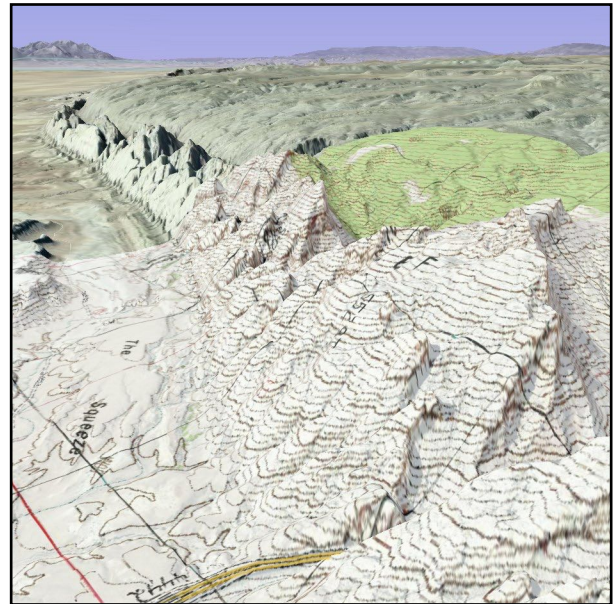
Other Useful Texts

[Surface Processes & Landforms](#),
Easterbrook, (1999, 2nd ed, Prentice Hall).
[Geotours Workbook](#) (used in GEOS 110),
Wilkerson et al., (2017, 2nd ed, W.W. Norton, Inc.).
[Reading the Earth](#),
Wyckoff, (1999, Adastra West, Inc.).

Suggested Materials

Pencil (0.5mm, 2H or 2), pen, colored pencils, eraser, scientific calculator, stapler, ruler, protractor (e.g., C-Thru™ 6" ruler/protractor combo), & USB flash drive.

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 GOALS

To use observations, measurements, and the logic of science to construct, analyze, and/or interpret topographic & geologic maps and their derivative cross sections in the context of the geologic processes that formed/sculpted them..

Upon completion of this course, **students will be able to...**

- demonstrate competency with varied forms of data analysis including organizing, interpreting, and drawing conclusions from quantitative and qualitative information (e.g., read and understand fundamental map elements such as scale, coordinate systems, etc.; develop valuable (aka marketable) quantitative skills/techniques and technologies using Google Earth, Adobe Illustrator/Inkscape, etc.) essential for obtaining a deeper understanding of geoscience-related map data).
- recognize various geological features/landforms and explain the process(es) that form them (e.g., understand the relationship of topographic and geologic map patterns to tectonic, geomorphic, hydrogeologic and climatic processes that shape and influence landform development).
- reason and communicate spatially using maps, cross sections, and/or scientific illustrations (e.g., interpret surface topography in the context of the underlying subsurface geology such as rock types, geologic structures, etc.; construct, analyze, and interpret geologic map patterns in areas of complex topography (using structure-contour maps); and create geologic cross sections that are constrained by geologic map patterns).

*Maps and cross sections provide a critical means for visualizing and understanding all kinds of location-based data that we encounter in our day-to-day lives. As such, **understanding how to accurately construct, interpret, and analyze maps and cross sections is a key practical skill for all geoscientists/environmental scientists in the 21st century.** That is, maps and cross sections help us address many applied problems that face today's society, ranging from identification and extraction of mineral & hydrocarbon resources to recognizing pollution sources and tracking both contamination plumes and remediation efforts to understanding natural hazards in order to predict future occurrences.*

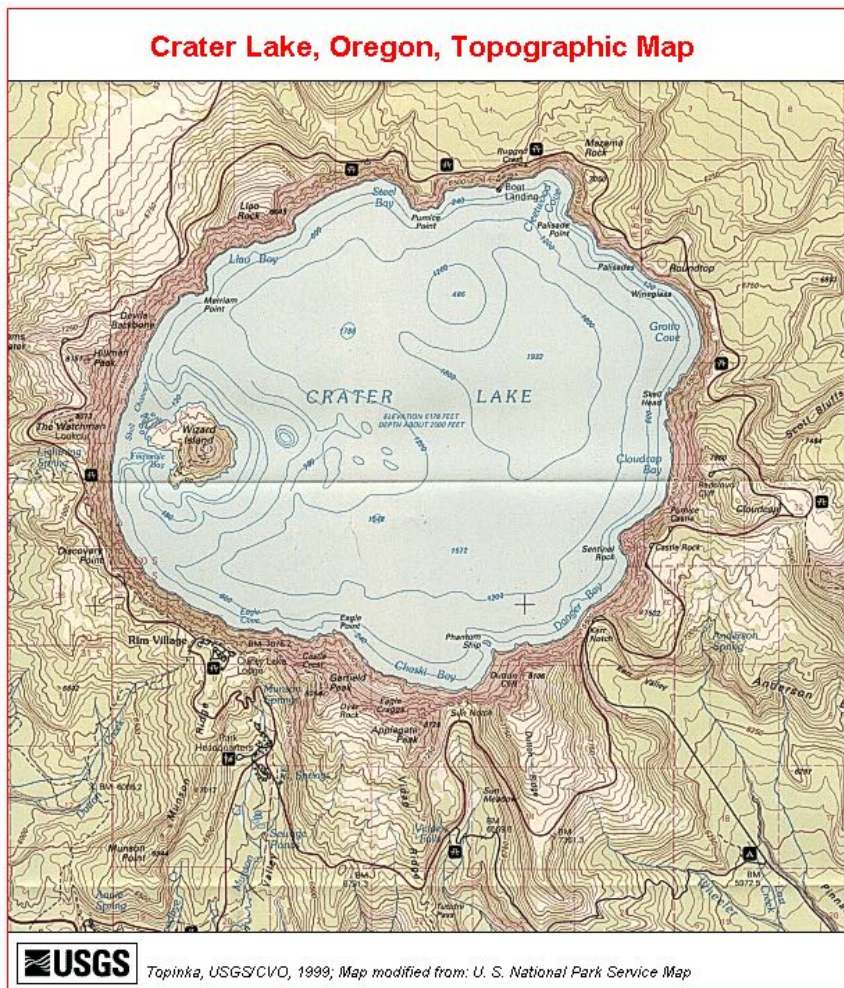
COURSE DESCRIPTION

This course employs a variety of teaching approaches to maximize student learning of geoscience content in a classroom where different students optimally learn material in different ways. Specifically, this course will involve a combination of Apple Keynote & DVD lectures (w/ text, graphics, movie clips, animations, interactive problem-solving, etc.) supplemented with hands-on, applied assignments/projects using Adobe Illustrator/Inkscape/ Affinity Designer, Google Earth, TouchTerrain, USGS DEM files, etc.

I provide my slides as PDFs on Moodle, so that students can print them out before class and annotate them with notes during class. That way, students aren't scrambling to write down every single word on a slide, allowing them to focus on the content and to participate in the discussion. To be prepared for class, students should R & R before class (not "rest & relaxation", but rather "read & retain" the accompanying materials...textbook, lecture notes, and/or assignments). Some of the best classes often arise from student questions about the material, so **PLEASE ASK QUESTIONS.**

Because of this hands-on approach, the distinction between "lecture" and "lab" may become blurred throughout the semester (in terms of both content and class times). Most assignments will involve problems from the Wilkerson (Wilk; 1st half of the semester) and Bennison, Olver, & Moseley (BOM; 2nd half of the semester) texts. The "useful texts" provide general references to help answer assignment questions.

We may have one or more field trips this semester (e.g., Lost River (IN) karst field trip; Illinois glacial field trip; Appalachian fold/fault/stream pattern field trip). The Department will provide transportation and lodging, however each student will be responsible for his/her own food. *Please check if there are any conflicts with proposed trips (e.g., talk to your other instructors/coaches ASAP, check your calendar, etc.).*



GRADES

The basis for final grades is described in the table below. *Extensions/make-up exams/assignments/quizzes will not be given unless there is 1) a documented emergency or 2) arrangements were made in advance because of exceptional circumstances.*

ASSIGNMENTS/QUIZZES

Assignments typically are practice problems to help you prepare for the exams and/or projects to explore course concepts in more detail. At my discretion, I may have you...

1. turn in assignments for a grade,
2. turn in assignments for a completion grade (not explicitly checking your answers), or
3. not turn in assignments for a grade.

All assignments to be “turned in” must...

- be submitted on time before the submission deadline (“*submission deadlines*” are truly deadlines...*you are highly encouraged to start your work early, and you (or your designee) may submit your work up until that deadline,*
- be clearly/neatly written (or typed) and in order (in sequence, stapled, pages not rotated or backwards, etc.),
- use the prescribed format if not worksheets (e.g., each problem starting on the front of a new page, all work & units shown in an easy-to-follow & neat format, answers boxed, in order (see above), etc.; *please ask if unsure*), and
- use the prescribed file naming convention & file type (if digital file).

Work that fails to meet these criteria will not be accepted and will receive a “0” (or at my discretion I will stop grading where I first encounter an issue). **Recognizing the value of neatly organizing one’s work and submitting it on time is another important educational goal in this course.**

Assignments are due before the beginning of class on the day specified unless you have instructions otherwise. No matter how the assignment is graded, the material will be addressed/covered on exams, so you are responsible to learn that material. That is, it is critical that you do all assigned work completely and strive to understand it to the best of your ability. Please note that I will not post my detailed solutions to assignments (as it is critical for you to work the assignments yourself), but I am certainly available for you to ask questions while you work on them.

Quizzes may be announced/unannounced and may cover material from assigned readings, lecture, lab, and/or assignments.

I will drop 3 assignments/quizzes because there may be absences that are unavoidable (e.g., illness, family emergency, sporting event, etc.) and because “unannounced” quizzes can’t be made up without disadvantaging those who were present originally.

EXAMS

I anticipate 4 exams for the course with your lowest exam score being dropped. In the event that we have only 3 exams because of course progress, no exam score will be dropped. That is, your total exam score will be comprised of 3 exams.

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 in class 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 and/or leaving the classroom during 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 reserve the right to assign a sub-standard participation grade. Each such sub-standard grade will result in lowering your final course grade by one percentage point.

Percent of Final Grade		Grading Scale*	
Exams 1-4* (3 x 30%)	90%	88%	100% = A- to A
Assignments/Quizzes**	10%	78%	87% = B- to B+
		68%	77% = C- to C+
		58%	67% = D- to D+
		00%	57% = F
*Lowest exam score will be dropped (unless only have 3 exams).		I use Excel (not Moodle gradebook) to calculate your grade, so ask me if you have questions about your current grade.	
**Lowest 3 will be dropped (no makeups if missed).			

KEYS TO SUCCESS IN THIS COURSE

1. **Read the Assigned Material** in a distraction-free environment and in advance of lecture over that material. As you are 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 the 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. *If I forget to call on you while I am in the middle of explaining something in lecture, PLEASE raise your hand again to remind me as I most certainly want to answer your questions!*
4. **Know the Key Terms** for each topic (use available textbooks, online resources, etc. to help you). If I use a term that you don't understand, PLEASE ASK me to define it.
5. **Check out the Internet**. There is a world of information on maps out on the Web (you might use a search engine to find web sites of interest).
6. **Use the library**. There are many books & articles in the library that pertain to the topics that we will be discussing (and we have a great interlibrary loan system for materials that our library does not carry). Also, you will find intro geology & geomorphology textbooks in the library, which will provide helpful information about geologic features and processes.
7. **Create your own Study Aids**. Some people like to highlight text in the chapter, others like to make flash cards, and still others like to study in groups and discuss the material. Feel free to experiment with what works for you. In addition, The Learning Commons in Roy O. West Library (<https://depauw.mywconline.com/>) has Q tutors and trained people available to help you refine and improve your study habits and techniques.
8. **Study the Material on a Regular Basis**. It is important that everyone maintain good study habits by regularly working with the assigned material (especially the assignments). Procrastination and cramming just don't work for most of us...it is best to get comfortable with the material as we go along so that you don't fall behind.
9. **Study for the Exam** as an individual and then as a group. Again, different people study in different ways. I've found that it helps to study as an individual first (thinking about what important concepts were emphasized in each chapter & lecture), then get together with others and study as a group (e.g., asking each other questions, brainstorming about what will be on the test, etc.).
10. **"Success is where opportunity meets preparation." - Zig Zigler**. Preparation in this context means applying a strong work ethic to practice your craft so that you are prepared when the opportunity (e.g., exam, homework/lab assignment, report, etc.) presents itself.

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 detail on exams). 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 before the next exam.

Can we have an exam review sheet? I may at my option. However, I have found it much more effective to highlight topics as a preface for each slide set with a "Learning Objectives" slide, so that you are aware of important learning goals prior to me going over them.

When will get feedback on our graded work? I usually need at minimum of a week to return graded work. While I might not always write detailed explanations on graded work, I will orally go over the answers or work the problems in class (usually based on student requests). Please ask questions in class or set up a meeting (virtual or in-person) 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 books or online resources?

Any geomorphology, physical geology, or geologic map interpretation textbook (e.g., the Easterbrook and Wyckoff books are good starting points as is your Marshak *Essentials of Geology* textbook)

<http://elasticterrain.xyz>

<http://www.gpsvisualizer.com>

<https://www.google.com/earth/desktop/>

<https://basemap.nationalmap.gov/arcgis/rest/services/USGSTopo/MapServer/>

<http://touchterrain.geol.iastate.edu>

<https://microdem.org/>

TENTATIVE ORDER OF TOPICS

Week Starting	Topics <i>last day to withdraw - 03/28</i>	Assignments
01: 01/27	Syllabus/Course Organization Review of Basic Map Elements Introduction to Google Earth	Moodle (geos315_2025sp_wilk.pdf) Wilk (DRAFT Ch 00 - Basic Map Elements) Wilk (Ch 01 - Intro to Google Earth)
Part I-Topographic Maps		
02: 02/03	Introduction to Topographic Maps Stream Landforms	Wilk (Ch 02 - Intro to Topographic Maps) Wilk (Ch 03 - Stream Landforms)
03: 02/10	Stream Landforms	Wilk (Ch 03 - Stream Landforms)
04: 02/17	Karst Landforms	Wilk (Ch 04 - Karst Landforms)
05: 02/24	Glacial Landforms	Wilk (Ch 05 - Glacial Landforms)
06: 03/03	Exam #1 - 03/06 (est) Fold Landforms	Wilk (Ch 06 - Fold Landforms)
07: 03/10	Fracture & Fault Landforms	Wilk (Ch 07 - Fracture & Fault Landforms)
08: 03/17 <i>(no class all week)</i>	Spring Break (3/15-3/23; University closed)	
Part II-Geologic Maps		
09: 03/24	Introduction to Adobe Illustrator	Wilk (Adobe Illustrator for Geoscientists)
10: 03/31	Exam #2 - 04/03 (est) Horizontal and Dipping Strata	BOM (Ch 1-3)
11: 04/07	3-Pt Problems	BOM (Ch 4)
12: 04/14	Geo-Unconformities	BOM (Ch 5)
13: 04/21	Folded Strata	BOM (Ch 6-7)
14: 04/28	Exam #3 - 05/01 (est) Faulted/Jointed Strata	BOM (Ch 8-9)
15: 05/05 <i>(no class F)</i>	Complex Folds & Faults	BOM (Ch 10)
Exam #4: <i>Mon, May 12, 8:30-11:30 am, Julian 201</i>		
Note: These topics and exam times are subject to change.		
<p>Students willing to become certified for driving University vehicles should visit https://www.depauw.edu/offices/finance-administration/faculty-and-staff-information/vehicle-use-policy/ to download and fill out the MVR consent form (Motor Vehicle Report consent form) and email it along with a copy of their valid driver's license to transportation@depauw.edu (and/or bburking@depauw.edu). Your Motor Vehicle Report will be reviewed, and if you are eligible to be a driver, you will receive a link to complete the certification training video/process.</p> <p>I will give bonus points on the first exam to students who show proof of <u>current</u> University driving certification before 02/28/2025 (it may take as much as a week to become approved, so please start the process early).</p> <p>Information about potential field trip opportunities this semester will be provided later (subject to weather, ongoing vehicle repairs, etc.). I imagine most opportunities will be after spring break and on a weekend.</p>		

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 Accessibility Services is required. If you are eligible to receive an accommodation and would like to request it for this course, please contact Student Accessibility 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 Accessibility Services or who have, or think they may have, a disability (psychiatric, attentional, learning, vision, hearing, physical, medical, etc.) are invited to contact Student Accessibility Services for a confidential discussion. Student Accessibility Services can be reached by phone at 765-658-6267 or studentaccessibility@depauw.edu.

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:

Plagiarism. Using the words or ideas of another writer, including AI-generated text, without attribution, so that they seem as if they are your own. Plagiarism ranges from copying work not written by the person taking credit for it, to rewriting such work with only minor word changes (mosaic plagiarism), to summarizing work (including that done by AI) without acknowledging the source. See the Writing Center Guide to Avoiding Plagiarism for further 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 in your book bag (not in the desk/table). 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.

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, do not use to view slides or take notes, etc.). Quit all programs not specifically designated by your instructor (not only reducing temptation, but also helping your computer run more efficiently).

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CLASSROOM BEHAVIOR

- **Early is on time, and on time is late.** (especially on days with 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.
- You are not permitted to record any of our class meetings. Student Accessibility Service accommodations pertaining to recordings of lectures for taking notes are addressed by the instructor providing handouts of lecture slides/ materials on Moodle.
- Materials (or derivative materials) from this course may not be shared, replicated, or published, in whole or in part, or used for any other purpose, without my written approval.

COVID-19 PROTOCOLS

The Fall 2024 DePauw University Covid-19 policy (<https://www.depauw.edu/campus-life/wellness/coronavirus/current-covid-19-guidelines-fall-2024/>) will be followed in this course (until they are updated). Please carefully read and follow these guidelines.

Masking with KF94, KN95 or N95 masks is **required** for ANYONE who: is experiencing symptoms that could be consistent with COVID-19; tested positive in the last 5 days; or was exposed to COVID-19 in the last 10 days.

Assess your personal health daily. It is of the utmost importance that if you have symptoms of COVID-19, you should put on a mask, and contact the DePauw Health Wellness Center.

