GEOL 310: Sedimentology and Stratigraphy

MWF 8:00-9:00, Julian 223 (lecture) • Tuesday 8:30-11:20, Julian 223 (lab)

Instructor: Dr. Tim Cope
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Office Hours: Wednesdays 1:00-4:00 or by appointment

COURSE MATERIALS:

Required Text: *Sedimentology and Stratigraphy, 2nd Edition*, by G. Nichols.
Recommended Text: *Principles of Sedimentology and Stratigraphy, 5th Edition*, by S. Boggs. (a classic)
Any additional readings will be put on reserve in the library or will otherwise be made available to you.

Lab Materials: Hand lens ($7), grain-size scale, brain. There will be a $10 lab fee deducted from your student accounts to cover the cost of lab materials.

COURSE OUTLINE:

This course is a survey of modern sedimentary geology that will give you some experience interpreting sedimentary rocks. When you complete this course, you should be able to read what sedimentary rocks tell you about Earth surface processes and how those processes have changed through time.

Lecture sessions

The topics we'll be covering are listed on the schedule at the end of this syllabus. Each topic comes with assigned reading. Most of these topics will be taught during one-hour lecture sessions. The lectures and book are not redundant: you should consider my lectures to be a *supplement* to what I expect you to learn independently in the reading. Stay on top of the reading, or you may find yourself lost.

My PowerPoint slides for the class will be made available through Moodle. I will try to post my lectures prior to each class session.

Take good notes. I tend to use figures from the primary scientific literature to illustrate points that I make in my lectures. Because the illustrations I use were not created primarily for this class, I will highlight what is important about each. It is your responsibility to capture these important points in your notes. If you miss a class, be sure to get the notes from another student you trust.

Laboratory/Homework

The laboratory exercises listed on the attached schedule are meant to give you experience interpreting sedimentary rocks and applying the concepts we discuss in lecture. Many of them will keep you occupied well beyond the normal lab period. I will also assign homework problems as needed. Failure to complete labs and homework in a timely manner will result in a significant drop in your grade.

Labs and homework assignments are not tests to see how smart you are. There is no reason why every student should not complete every lab correctly. If you need help, seek me out during my office hours or make an appointment. You may work on labs independently or in a group, but whichever you choose make sure that you understand the full content of what you turn in. You will be tested on it later.

Field trips

The best place to see sedimentary rocks is in the field. So, we're having a lot of field trips. Most of them will take place during the lab period. On these days, we'll leave early (7:00) and return to campus late (~12:30), so pack a lunch. We will also have a full-day field trip during the weekend of April 4-5. Put these dates in your calendar now—I'm hoping to schedule this latter trip on a single day the full class can attend.

Term Paper

During our April field trips, we will visit three classic exposures of the Mansfield Formation in Indiana. Each student will interpret the data and observations made during these field trips to place the Mansfield Formation into broader geologic context in an illustrated, referenced term paper that is due at the end of the semester. Feel free to start seeking references now—GeoRef or Google Scholar are good places to start.

Exams

There are two midterms and a final exam. Collectively, these are worth 60% of your grade. Exams will cover material from lecture, from the reading, and from lab. The final exam will be comprehensive (but focused on material not covered in prior exams).

GRADING:

Grades will be assigned as follows.

One-hour exams (2):	40%
Final Exam (Cumulative):	20%
Lab Exercises/homework:	30%
Mansfield Formation Report:	10%

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%

Academic dishonesty:

Don't cheat. Don't plagiarize. If there are two things I have zero tolerance for, it's these. Break either of these basic rules, and you will fail the course. If you have any questions about what constitutes "cheating" or "plagiarizing" then see me. In a science course, a simple litmus test is this: if you don't understand your own work, then you've probably copied it.

Information for students with disabilities:

DePauw University is committed to providing equal access to academic programs and university administered activities with reasonable accommodations to students with disabilities, in compliance with the Americans with Disabilities Act and Amendments (ADAAA). Any student who feels she or he may need an accommodation based on the impact of a disability or learning challenge is strongly encouraged to contact Pamela Roberts, Coordinator of Student Disability Services for further information on how to receive accommodations and support. Student Disability Services is located at 101 E. Seminary St., 765-658-6267.

Course Schedule

Listed below is an ideal schedule for this class. I reserve the right to alter this schedule as I see fit. The exam dates will not be modified unless dictated by a popular vote in the class. The date and time of the final exam cannot be modified. Readings listed are from Nichols. (*= I will provide you with additional reading material on some weeks.)

Week:	Lecture topic	Reading*	Lab Assignment	Other
Jan 27	The "Big Picture": Sediment Sources and Sinks	Ch. 1, 6, & 24	----------	
Feb 3			Textural analysis of sediment	
Feb 10	Sedimentary rocks and diagenesis	Ch. 2, 3 & 18	Siliciclastic Rocks	
Feb 17			Chemical Rocks	
Feb 24	Sediment transport and sedimentary structures	Ch. 4	Sedimentary provenance	
Mar 3			***Exam 1: Tuesday, Mar 4***	
Mar 10	Facies models; Terrestrial environments	Ch. 5; 7-10	Sedimentary structures	
Mar 17			Field description of sedimentary rocks	***Lab field trip, March 18***
SPRING BREAK: MARCH 22-30				
Mar 31			Depositional systems: the Mansfield Formation	***Lab field trip: Apr. 1*** ***Full-day field trip: Apr. 5 or 6***
Apr 7	Marine environments	Ch. 11-16		***Lab field trip: Apr. 8***
Apr 14			***Exam 2: Tuesday, April 15***	
Apr 21	Lithostratigraphy	Ch. 19	Stratigraphic correlation I	
Apr 28	Stratigraphic tools	Ch. 20, 21, 22	Stratigraphic correlation II	
May 5	Sequence stratigraphy	Ch. 23		***Mansfield paper due***

Final Exam:
Saturday, May 10, 8:30-11:30 am