GEOS 110: Earth and the Environment

A: MWF 9:10-10:10, Julian 222 • Thursday 8:00-9:50, Julian 222 (lab)
B: MWF 9:10-10:10, Julian 222 • Thursday 2:00-3:50, Julian 222 (lab)

Professor: Dr. Tim Cope
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Office Hours: see link to my calendar on Moodle

Course materials

Textbook: *Essentials of Geology (6th Edition)* by S. Marshak. Bundled with *GeoTours Workbook*, by M. S. Wilkerson and B. Wilkerson. Available in print or as an e-book.
Lab Materials: There is a $20 lab fee that covers lab materials for the class. This fee will be assessed to your student account after the adjustment period.
Online resources: Homework, flash cards, video, and other resources are posted on Moodle.

What this course is about

This course is an overview of what we know about the Earth and how we know it. It is designed to give you a basic knowledge of Earth systems in the classroom, and experience working with geoscience concepts in the laboratory. The content of the course is mainly geology (the study of the solid Earth), which also involves aspects of chemistry, physics, mathematics, astronomy, and biology.

Because the Earth is our home, and because all life on Earth exists only by consent of the natural systems we depend upon, geoscience affects every facet of the human experience. By the end of this class, you should be able to more objectively evaluate issues involving science and public policy, understand how geologic processes and hazards affect the world around you, and gain a better appreciation for how human civilization is dependent upon the environment.

Course Goals

This course satisfies graduation requirements (SM, Q, 1 course credit) as well as serving as a gateway course for geoscience majors and a prerequisite for all 200 and 300 level courses in the Geoscience department. However, what I hope you learn from this course goes well beyond the credentials towards graduation that you will earn. Even if you never plan to take another science course in college, I can guarantee you that the things you learn in this class, just like every class you take in college, will serve you in some way down the road.

The three things I want every student to take away from this class are simple. Here they are:

1) An understanding of and appreciation for the Earth, earth science, and the natural world;
2) A greater ability to reason scientifically and quantitatively;
3) Earth science knowledge that may prove useful to you in your future.

If you ever decide to major in the geosciences, I cannot emphasize enough how important it is that you become familiar with the language of earth science, and that you completely understand and can apply all of the concepts delivered in this course. There is a lot to learn here, but it is only the basics. Everything else builds upon what you learn in this course.

Course mechanics

Your success in this course depends largely upon your dedication to learning outside of the classroom. You must keep up with both the reading and the homework, because I consider the content of our course meetings to be largely additions to (not repetitions of) the material presented in the text. Come to class meetings prepared with questions you have about the reading. The more participation there is from members of the class, the more effective our class sessions will be.

It is your responsibility to attend every class session. If you miss a class, get notes from someone that you trust. I strongly advise you to miss as few sessions as possible. There tends to be a positive correlation between grades and attendance in this course. Excessive unexcused absences may result in being dropped from the course (note the attendance policy in the Academic Handbook).

Lecture sessions (MWF, one hour) are an in-depth supplement to the reading. I like to pick one or two topics from each chapter in the book that I think illustrate core geologic or general scientific concepts, and expand on these in more detail. Many of the topics we discuss in class will not be covered elsewhere, so attendance, attention, and note-taking are important!

I recommend a notebook and pencil for taking notes. Graph paper is often useful. I do not recommend taking notes on an electronic device. Note-taking should be interpretive: do not simply try to transcribe everything that I say without understanding it! Rather, you should be actively conceptualizing what is being said in class, making note of the key points, and asking questions if you're not sure what the key points are. Use sketches and diagrams wherever possible. This same process should take place during your reading—take notes, then, too. Rewrite your notes when you can—this is a good way to study.

Applying geoscience concepts in the laboratory and homeworks:

Ideas and theories from the reading and lectures will be applied to problem solving during lab exercises and homework assignments. Homework is posted on Moodle. In addition to the lab assignments, there will be two quizzes and a lab final to specifically test the information covered in the labs.

My policy on lab assignments and homework for this class is that everyone must get the right answer, otherwise you are learning to do things wrong. The purpose of these assignments is that you understand how to arrive at that correct answer. It is your responsibility to check your answers with me (or against a posted key) to ensure that your answers are indeed correct. You may work in groups, but make sure that you understand all the material!

The natural world is the geoscientist's laboratory. We will utilize this "laboratory" during field trips, tentative dates of which are indicated on the attached schedule. *Please dress accordingly!!* Field trips will be rescheduled only due to extreme weather.

You must complete all the lab assignments and homework. Lab attendance is mandatory. The labs and homework are meant to enhance your understanding of the course material. If you do not take the lab assignments seriously, you will not be able to replicate the techniques you learn on the exams, and you will very likely fail the course.

Assessment:

Your grade in this course will be based on satisfactory completion of all lab and homework assignments and your performance on exams and quizzes. There are two one-hour, in-class examinations and a 3-hour final exam. There will also be two lab quizzes and a lab final (given during the last week of classes). The dates of these exams are noted on the attached course schedule. Exceptions will be made only for documented emergencies. The final exam will be given on the date given in a the academic calendar, and will be comprehensive. The final exam must be taken at this date and time.

Grades will be based on your performance according to the following:

One-hour exams (2):	30%
Final Exam (Cumulative):	20%
Lab Quizzes (2):	20%
Lab Final:	20%
Lab/homework assignments:	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%

Course policies:

'Q' Certification:

In order to obtain a Q for this course, you must:

1) Average at least 75% on the lab final and "Q" exam questions; **AND**
2) Receive a course grade of C- (70%) or better.

It is your responsibility to approach me with any problems you may be having in the class. If you are not doing as well as you had hoped or expected, or if there are extenuating circumstances that are affecting your performance in this course, PLEASE talk to me about it. I am here to help!

Information for students with disabilities:

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.

Information for underrepresented students in Science, Technology, Engineering, and Math (STEM):

Often times, students of color enter campus feeling isolated, overwhelmed, or less welcomed than their peers. Though it is common knowledge that STEM careers are in high demand, people of color are still underrepresented in many STEM fields. I strive to teach my course using inclusive pedagogies. As part of that approach I want to draw your attention to Students of Color in STEM (S.o.C.i.S.), a student organization providing community and support for STEM students who identify as students of color or underrepresented identity. This organization provides these students with a network of peers that can support them academically and socially. Programming for this student organization will come in the form of talks led by alumni professionals of color, scholarship and fellowship workshops, networking opportunities for underrepresented students in STEM, opportunities to travel to STEM conferences (i.e SACNAS, ABRCMS), and many more opportunities to grow as a professional in STEM. Please consider joining this exciting organization and feel free to reach out to Brittany Davis, SoCiS President Mahmoud Abouelkheir, or Faculty Advisor Bridget Gourley (Biochemistry & Chemistry) with questions and to also join their e-mail list at: (SoCiS_list@depauw.edu). Reach out to them at the Student Organization Fair on August, 23rd, 2019 from 6:00pm to 8:30pm.

Academic dishonesty:

Any act that places a student in unfair advantage with respect to the rest of the class will be treated according to the University policies outlined in the Student Handbook. Do your own work. DON'T CHEAT. I have a zero-tolerance policy on cheating: if you are caught cheating, you will receive an automatic "F" in the class and will be reported to the University Review Committee for disciplinary action.

Earth and the Environment Schedule

Field trip dates may be changed depending on weather. The dates of exams and quizzes are subject to change only with unanimous consent of the class. Please bring your laptops to every lab session (except for field trips, when you should bring a notebook and pencil). Homework assignments will be given in class as necessary.

Week of	Lecture Topic	Reading	Thursday Lab Schedule
Aug 21-23	Introduction	Prelude	DePauw Nature Park ***Field Trip Lab***
Aug 26- 30	The solid Earth	Chapter 1, Interlude D	Mineral identification
Sept 2 -6	Plate tectonics	Chapter 2	Mineral identification
Sep 9-13	Minerals and rock groups	Chapter 3; Interludes A & C	**LAB QUIZ 1 (Minerals)**
Sep 16-20	Igneous processes and volcanoes	Chapter 4, 5	Rock identification
	EXAM 1: MONDAY, SEPTEMBER 23 DePauw Dialogue: Wednesday, September 25		
Sep 27	Volcanoes and volcanic hazards	Chapter 5	Rock identification
Sept 30-Oct 4	Sedimentary processes and rocks	Chapter 6, Interlude B	**LAB QUIZ 2 (Rocks)**
Oct 7-11	Metamorphic processes and rocks	Chapter 7	Shades State Park ***Field Trip Lab* (early departure)**
	FALL BREAK: OCTOBER 12-20		
Oct 21-25	Earthquakes, geologic structures	Chapter 8, 9	Big Walnut Creek streamflow ***Field Trip Lab* (early departure)**
Oct 28-Nov 1	Geologic time	Chapter 10, Interlude E	Measuring the Earth with GPS ***Field Trip Lab* (regular time)**
	EXAM 2: MONDAY, NOVEMBER 4		
Nov 4-8	Rivers and erosion	Chapter 14, Interlude F	Plane table mapping ***Field Trip Lab* (regular time)**
Nov 11-15	Groundwater	Chapter 16	Topographic Maps
Nov 18-22	Glaciers and climate	Chapter 18, 19	Geologic Maps
Nov 25	Glaciers and climate	Chapter 18, 19	No Lab, Thanksgiving!
Dec 2-6	Geologic resources	Chapter 12	**LAB FINAL EXAM** (cumulative)

FINAL EXAM: FRIDAY, DEC 13, 8:30-11:30 AM