

Environmental Geology

GEOS 230

Fall 2023



LECTURE: MWF (10:10am – 11:20pm Eastern Daylight Time, EDT)

Room: JSC 226

Instructor: Dr. Ken Brown

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Phone: 765.658.6767

Office: Julian 213

Office Hours: MWF 11:30-12:30am (EDT); or by appointment

Textbook: *Introduction to Environmental Geology* (5 ed.) by Edward Keller (*Optional*)

ISBN-10: 0199827389 **ISBN-10:** 0199846278

Additional Readings are posted in Moodle

COURSE DESCRIPTION

An intermediate examination of the processes that influence the physical and chemical nature of the Earth's surface with special attention given to the influence of human actions on the lithosphere, hydrosphere, and atmosphere. This course focuses on two broad areas: 1) Natural Resources (e.g., mineral/rock/energy, water, air, soil) and 2) Human-Earth interactions (e.g., geohazards, pollution, human health). Real-world examples emphasize the importance of these topics for solving environmental problems and addressing issues related to environmental justice. Students are expected to complete a collaborative research project focused on a community-level environmental issue.

PRIMARY COURSE OBJECTIVES: At the end of this course, students will/should be able to:

1. Apply the scientific method and distinguish between scientific and non-scientific arguments.
2. Use appropriate geologic concepts and terminology to describe materials, natural processes, and phenomena.
3. Create evidence-based conclusions using basic observational, quantitative, or technological data.
4. Explain how humans impact (and are impacted by) the Earth and its environment, its resources, and its processes.
5. Use field methods, observations, and technology to acquire, analyze, and interpret data aimed at understanding geologic materials, processes, and environmental problems.
6. Articulate geoscience concepts, ideas, and results to a variety of audiences by written, oral, and graphical means.

**These course objectives are linked to specific student outcomes and performance indicators outlined in the Geology & Environmental Geoscience Assessment Plan.*

BASIC STUDENT RESPONSIBILITIES - It is your responsibility/expectation to....

- Enjoy the learning process, remain open-minded, and be respectful
- Read, understand, and abide by policies established in this syllabus and DePauw's Student Handbook
- Know when all important assessments and exercises are due
- Complete assessment and assigned exercises by the due dates/ deadlines
- Attend class and participate in class activities
- Check your email daily for updates and announcements.
- Attend office hours and ask questions when you don't understand content or directions.

COURSE FEE: In order to provide an experiential research project in this course, students will be charged a course fee (~\$25). This fee helps offset costs associated with laboratory materials and our use of analytical equipment (SEM, XRF, Water Analysis Instrumentation) used in the course.

GRADING*

• Syllabus Quiz	20pts
• Lecture Quizzes	6 @ 30pts = 180pts
• Env. Research Project	
○ Intro & Background Section*	25pts
○ Methods Section*	25pts
○ Results & Figures Section*	25pts
○ Conclusion & Future Work Section*	25pts
○ Final Poster*	100pts
○ Group Presentation*	50pts
• Participation	50pts
Total:	500pts

*collaborative group grade; other items receive individual grades

Letter Grade	Percent Range
A	100.00 - 93.00
A-	92.99 - 90.00
B+	89.99 - 87.00
B	86.99 - 84.00
B-	83.99 - 81.00
C+	80.99 - 78.00
C	77.99 - 75.00
C-	74.99 - 72.00
D+	71.99 - 69.00
D	68.99 - 66.00
D-	65.99 - 63.00
F	<62.99

STUDENT FEEDBACK: Timely and adequate feedback is essential to student learning. Thus, I will strive to provide timely feedback on your submitted work, offering constructive comments and ways to improve. Students should contact me if they wish to have additional feedback on their submitted work.

ATTENDANCE: Attendance is required and is important to your success in this course. Students are expected to attend all class sessions. *If you are absent, you will be held responsible for all of the content, activities, and announcements that you missed. It is common for students to face unplanned challenges that result in absences. If you miss class and this results in a missed course work (e.g., quiz/activity/group work), you are expected to provide documentation of your absence. DePauw CARES team (care@depauw.edu).*

LECTURE QUIZZES: Quizzes focus on lecture content and reading assignments (articles). These low-stake quizzes are designed to help you recognize areas of weakness and strength in your learning. *Quiz dates are outlined in the calendar. Make-up quizzes require documentation and will be done during office hours.*

DISCUSSIONS/ACTIVITIES: We will complete several course discussions/activities that are directly tied to course objectives and lecture content. These learning opportunities offer students a chance to discuss lecture content and articles, practice skills relevant to the environmental research projects, and build a fun, collaborative, and respectful learning community.

ENVIRONMENTAL RESEARCH PROJECTS: Students will collaborate on a real environmental research project that utilizes field/laboratory methods appropriate for entry-level environmental careers. To help students make progress, components of the project will be completed over several weeks (some class time will be allotted). Environmental problems require collaboration. Thus, students are expected to equitably share the workload and submit deliverables by their stated deadlines. Failing to fulfill your responsibilities will result in a reduction to your course grade. Late submissions will be penalized 10% for each day submitted late (including weekends). To ensure that all students contribute equitably to the group project, each group will create a contract that outlines responsibilities. You will also be expected to complete group work outside of class time (e.g., sample collection, lab preparations, analysis, collaborative writing). This project also requires a weekend field trip(Oct 7th & 8th). This project is linked to objectives #1-#6.

PARTICIPATION: Learning requires participation. Your participation and contributions to this course and the environmental research project are important to your success in this course. Thus, you are expected to attend class, participate in class discussions/activities (inside and outside of the classroom), collaborate with others, maintain a positive and welcoming attitude, complete assignments by their deadlines, and be respectful to others, their opinions, and their perspectives. Please note - *your participation grade takes all of these factors into account along with your contributions and attendance during class activities/project workdays.*

ADDITIONAL POLICIES AND INFORMATION:

EMAIL: If you cannot meet during office hours, please email your instructor. *Emails sent after 5pm may not receive a response until the next day. Emails sent over the weekend may not receive a response until the following weekday (Monday). Please respect this policy and plan accordingly.*

Diversity, Equality, & Inclusivity:

The Geology & Env. Geoscience Department at DePauw is committed to providing an inclusive environment of learning and living that is open to all people and perspectives. It is the policy and practice of this course and its instructor to create a welcoming environment for all students as well as to address students in accordance with their personal identities. In this course, you will be encouraged to remain open to information, ideas, and experiences shared by other students. For more information about diversity and inclusion at DePauw, please use the following link: <https://www.depauw.edu/studentacademiclife/cdi/>

ADA Accommodations:

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 in Union Building Suite 208 or by phone at 658-6267. (studentaccessibility@depauw.edu).

Resources for Unrepresented Students in STEM:

Students of Color in STEM (SoCiS) is a student organization aimed at supporting STEM students who identify as students of color and members of diverse underrepresented identities on campus. This organization provides these students with a network that could be a support system for them academically (tutoring) and socially (mentoring). Please consider joining this exciting organization and feel free to contact executive members Brittany Davis, Antoinette Gibson, or Bridget Gourley (Chemistry & Biochemistry) for more information. Join their e-mail list at: (SoCiS_list@depauw.edu).

Copyright Policy:

All materials provided to you in this course are copyrighted. None of the course materials may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without prior written permission.

Academic Integrity Statement:

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. Cheating, plagiarism, submission of the work of others (or ChatGPT) violates DePauw's policy on academic integrity. Lapses of academic integrity will be dealt with according to the policies set forth in the student handbook. If you are not sure what constitutes dishonest academic activities, please make sure you discuss any questions you may have with me. The policy and discussion of each student's obligations and rights can be found in the Student Handbook. The policy is also available at: <https://www.depauw.edu/academics/academic-resources/academic-integrity/>. **NOTE:** *Any use of AI in this class will be treated just like assistance from another person. Using ChatGPT (or any other AI) circumvents the learning goals of this class—and it is plagiarism—to turn in written work generated by AI in place of your own. Use of AI on assignments will result in a zero for that grade item. If you are unsure what constitutes plagiarism, please ask your instructor.*

As the instructor, I agree:	Your basic responsibilities as the student:
<ol style="list-style-type: none"> 1. To begin and end class at its scheduled time. 2. To respectfully answer questions about the subject matter (i.e. to respect all questions and students). 3. To accept questions before/after the class period and to respond to these accordingly. 4. To promptly notify students of any change made to the course. 5. To be approachable and respectful to students. 6. To provide timely and adequate feedback on submitted student work. 7. To agree to meet with students that make office appointments. 8. To teach you fundamental geologic concepts and vocabulary relevant to a career in the Geosciences. 9. To have fun while teaching this course! 	<ol style="list-style-type: none"> 1. Remain open-minded about course content 2. Attend online class meetings and be prepared for class activities 3. Refrain from any disruptive behavior (talking, texting, phone calls, laptop use). 4. Email/visit your instructor if have questions. 5. Abide by all of the policies outlined in this syllabus and in-class. 6. Respect the opinions, ideas, and experiences shared by other students. 7. Complete all assignments and assessments by their respective due dates/ times. 8. Work collaboratively and equitably on assignments 9. Check your email daily for class announcements 9. Enjoy how cool science can be!

Teaching and Office Hours Schedule – Subject to Change

Dept. of Geology & Env. Geoscience; Fall 2023 Teaching/ Office Hour Schedule					
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9:00 AM					
9:10 AM 9:20 AM 9:30 AM 9:40 AM 9:50 AM					
10:00 AM					
10:10 AM 10:20 AM 10:30 AM 10:40 AM 10:50 AM					
11:00 AM	GEOL 230 LECTURE 10:20 - 11:20 AM		GEOL 230 LECTURE 10:20 - 11:20 AM		GEOL 230 LECTURE 10:20 - 11:20 AM
11:10 AM 11:20 AM 11:30 AM 11:40 AM 11:50 AM					
12:00 PM	OFFICE HOURS 11:30 - 12:30 PM (or by appointment)		OFFICE HOURS 11:30 - 12:30 PM (or by appointment)		OFFICE HOURS 11:30 - 12:30 PM (or by appointment)
12:10 PM 12:20 PM 12:30 PM 12:40 PM 12:50 PM					
1:00 PM					
1:10 PM 1:20 PM 1:30 PM 1:40 PM 1:50 PM					
2:00 PM	GEOS 125 LECTURE 1:40- 2:40 PM		GEOS 125 LECTURE 1:40- 2:40 PM		GEOS 125 LECTURE 1:40- 2:40 PM
2:10 PM 2:20 PM 2:30 PM 2:40 PM 2:50 PM					
3:00 PM	GEOS 125 LECTURE 2:50- 3:50 PM		GEOS 125 LECTURE 2:50- 3:50 PM		GEOS 125 LECTURE 2:50- 3:50 PM
3:10 PM 3:20 PM 3:30 PM 3:40 PM 3:50 PM					
4:00 PM					

SYLLABUS CALENDAR (subject to change)

Blue = Quiz or Assignment Orange = Final Poster Project

MONTH	WEEK	DAY	TOPIC	READING/ ASSIGNMENT		
AUG.	Week 1	21-Aug	-	-	Fundamental Env. Geology Concepts	
		23-Aug	Overview & Env. Research Project Intro	Class Activity; Article #1		
		25-Aug	Intro to Environmental Geology	Syllabus Quiz		
SEPTEMBER	Week 2	28-Aug	Geology & Health (Part I)	Article #2		
		30-Aug	Geology & Health (Part II)	-		
		1-Sep	Geology & Health Continued	Quiz #1		
	Week 3	4-Sep	Labor Day - No Class			
		6-Sep	Rock & Mineral Resources	Article #3		
		8-Sep	Rock & Mineral Resources	Quiz #2		
	Week 4	11-Sep	Soils & Soil Mineralogy	Article #4		
		13-Sep	Soil Classification & Textures	-		
		15-Sep	Soil Pollution & Legislation	Quiz #3		
	Week 5	18-Sep	Air & Air Pollution	Article #5		
		20-Sep	Air Pollution, Legislation, & Treatment	-		
		22-Sep	Discussion & Activity	Quiz #4		
OCTOBER	Week 6	25-Sep	Water Resources	Article #6	Env. Geology Research Skills	
		27-Sep	Water Pollution & Legislation	-		
		29-Sep	Env. Research Methods: Water Analyses	Quiz #5		
	Week 7	2-Oct	Env. Research Project Logistics & Planning	Article #7		
		4-Oct	Env. Research Methods: SEM	-		
		6-Oct	Env. Research Methods: XRF	QUIZ #6; WEEKEND FIELD TRIP*		
	Week 8	9-Oct	Env. Research Methods: Lab Techniques	Article #8		
		11-Oct	Introduction & Background Discussion	Library Guide		
		13-Oct	Lab Work & Library Research Day	Submit Group Contract		
	Week 9	16-Oct	FALL BREAK			
		18-Oct				
		20-Oct				
NOVEMBER	Week 10	23-Oct	Strategies for Scientific Research Posters	Read Strategies for Posters	Env. Geology Research Project	
		25-Oct	SEM Data & Data Analysis	-		
		27-Oct	XRF Data & Data Analysis	-		
	Week 11	30-Oct	Methods Section Discussion	-		
		1-Nov	Project Workday	-		
		3-Nov	Project Workday	Intro & Background Section Due		
	Week 12	6-Nov	Results & Figure Section Discussion	-		
		8-Nov	Project Workday	-		
		10-Nov	Project Workday	Methods Section Due		
	Week 13	13-Nov	Conclusion Section Discussion	-		
		15-Nov	Project Workday	-		
		17-Nov	Project Workday	Results & Figure Section Due		
DECEMBER	Week 14	20-Nov	Project Workday		Env. Geology Research Project	
		22-Nov	THANKSGIVING BREAK			
		24-Nov				
	Week 15	27-Nov	Project Workday	-		
		29-Nov	Project Workday	-		
		1-Dec	Project Workday	Conclusion & Future Work Due		
	Week 16	4-Dec	Project Workday	-		
		6-Dec	Final Poster Due			
		8-Dec	GROUP POSTER SESSION			