Intro to Environmental Science
GEOS 125
Fall 2024

LECTURE*: GEOS 125A: *12:30-1:30pm MWF* **Room**: JSC 223

Instructor: Dr. Ken Brown **Email:** kennethbrown@depauw.edu **Phone:** 765.658.6767
Office: Julian 213 **Office Hours**: MWF 11:30 -12:30am; or by appointment
Textbook: *Essentials of Environmental Science* (2 ed.) (*Optional*) ISBN-10: 1-319-06566-X
Zehnder et al. (2017) (Open-Source Textbook) https://oer.galileo.usg.edu/biology-collections/2/
Additional Readings & Documents are posted in Moodle

COURSE DESCRIPTION:

This course is an introduction to environmental science. It is a survey of fundamental scientific principles and covers the basic content necessary for students interested in environment careers. This course utilizes a "*systems thinking approach"* to help increase student understanding of natural systems and the continuous interactions between the Earth's hydrosphere, atmosphere, geosphere, and biosphere. This course also explores how humans impact and are impacted by the natural world. GEOS 125 is interdisciplinary, integrating science from three primary areas: 1) Biological sciences (e.g., ecosystems & evolution); 2) Geological sciences (e.g., mineral, rocks, soils, water, air); and 3) Energy & Climate Science (e.g., climate change). NOTE: aspects of chemistry, physics, math, history, economics, sociology, and environmental justice are also included.

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

1. Apply the scientific method to study the Earth and its many environments and processes
2. Describe the natural processes operating at and beneath the Earth's surface, and explain how those processes affect humans
3. Use appropriate concepts and terminology to describe natural features and phenomena
4. Explain how humans impact (and are impacted by) the Earth and its environment, its resources, and its processes
5. Acquire, analyze, and interpret scientific data aimed at understanding earth materials, natural processes, and landscapes

**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 to others
- Read, understand, and abide by all policies established in this syllabus and the Student Handbook
- Know when all important assessments are scheduled (outlined in the syllabus calendar)
- Complete assessment and assigned exercises by the *due dates/deadlines*
- Attend class, participate in activities, and engage with materials inside & outside of the class
- Check your email daily for updates and announcements
- Attend office hours and ask questions when you don't understand content or directions

GRADING*

Syllabus Quiz	*20pts*
Exam #1	*100pts*
Exam #2	*100pts*
Exam #3	*100pts*
Exam #4	*100pts*
Weekly Quizzes	*8 @ 10pts = 80pts*
Total points:	**500pts***

**It is the student's responsibility to regularly check with the instructor about their progress in the course (grade, attendance, etc.).*

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 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: Regular attendance is required and is important to your success in this course. Students are expected to attend class sessions, and while in class, refrain from any activity that could interfere with the learning experience of others. It is common for students to face challenges (e.g., academic, medical, spiritual, or emotional) that result in absences. *If you have to miss class, please let me know and I will help you catch up. You will be responsible for all of the content (and announcements) that you missed during your absence.*

SYLLABUS QUIZ: Understanding course expectations and student responsibilities are important for any student enrolled in a college course. As such, students will complete a brief quiz during the first week of classes that acknowledges these course expectations/responsibilities. Upon reading the syllabus, you will need to complete the quiz in Moodle. *The due date is stated in the syllabus calendar.*

EXAMS: *Exams evaluate your understanding of fundamental concepts/vocabulary and your ability to apply these concepts to solve problems*. Please note that concepts and vocabulary found in one section/chapter may require you to have a working knowledge of previous concepts and vocabulary from earlier sections/chapters. If it is covered in the lecture (lecture slides/reading assignments/discussions), you are responsible for knowing it. You will have four exams; each exam will contain an array of question types (e.g., T/F, Matching, Multiple Choice, Short Essay, Calculations, etc). The last exam is comprehensive. *The dates for all exams are outlined in the syllabus calendar.* No make-up exams will be given without proper approval by the instructor. Approved make-up exams are taken during office hours or by appointment. You may not take the final exam early. Exams are linked to course objectives #1- #5.

QUIZZES: Quizzes are designed to help you determine how well you understand that week's material. These low-stake quizzes help you recognize areas of weakness/strength in your learning. There are 8 quizzes (all weighted equally - 10pts each). *Quizzes are completed in Moodle (available from Friday – Sunday 11:59pm).* If fail to complete a quiz, the missed quiz's score will be replaced with the next exam's score. Thus, this policy allows you to miss one quiz during the semester. Quizzes are linked to course objectives #1- #5.

IN-CLASS DISCUSSIONS/ACTIVITIES: Class discussions and activities are designed to: 1) supplement lectures; 2) facilitate student interactions with each other; 3) permit questions to be answered about the course content; 4) explore selected course topics in more depth; and 5) offer opportunities to have hands-on learning. *You are expected to join AND participate in these discussion sessions/activities.* Some of these discussions/activities may focus on reading assignments. As such, you are expected to read the assigned article ahead of time and be prepared to discuss the reading with your classmates/instructor. *Please note - content from our discussion/activities may be found on quizzes and exams!* Class discussions/activities are linked to course objectives #1- #5.

ADDITIONAL COURSE 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 business day. Emails sent over the weekend may not receive a response until the following weekday (Monday). Please respect this policy and plan accordingly.*

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 from the instructor.

INCLUSIVITY STATEMENT:

"A university is a place where the universality of the human experience manifests itself" – Albert Einstein. In keeping with Einstein's viewpoint, the Geosciences program 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 identity. In this course, you will be encouraged to remain open to information, ideas, and experiences shared by others. For more information about diversity and inclusion at DePauw, please use the following link: https://www.depauw.edu/studentacademiclife/cdi/

INCLUSIVITY IN THE GEOSCIENCES:

Geoscientists address increasingly challenging problems that confront a growing human population: climate change, dwindling natural resources, earthquake prediction and natural hazard identification, human-environmental impact, and safe disposal of toxic and radioactive waste materials. Because the Earth is our only home, the geosciences promote stewardship of the environment and Earth's finite natural resources, therein creating a deeper sense of social and civic responsibility that transcends all races, cultures, ages, and identities. As such, there are many professional societies and organizations that support the intersectionality of students within the geosciences (e.g., GeoLatinas, National Association of Black Geoscientists, Association of Women Geoscientists, 500 Queer Scientists; Geoscience Alliance; etc.). Please let me know if you are interested in joining one of these communities. I would be happy to connect you.

ADA ACCOMODATIONS:

It is the policy and practice of DePauw University to strive to support the student experience and to provide reasonable accommodations for students with properly documented disabilities. 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.
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 765-658-6267 (studentaccessibility@depauw.edu).

ACADEMIC INTERGRITY 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, etc. 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 is also available at: http://www.depauw.edu/handbooks/academic/#Toc459018101

As the instructor, I agree:	Your basic responsibilities as the student:
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 course changes. 5. To be approachable and respectful to students. 6. To provide timely and adequate feedback. 7. To meet with students that schedule 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!	1. Remain open-minded about course content 2. Attend regular class meetings and be prepared for class/lab 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 policies outlined in the syllabus. 6. Respect the opinions, ideas, and experiences shared by other students. 7. Complete all assignments and assessments by their respective due dates/ times. 8. Check email daily for class announcements. 9. Enjoy how cool science can be!

Teaching and Office Hours Schedule – Subject to Change*

Dr. Ken Brown

Dept. of Geology & Env. Geoscience; Fall 2024 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**		GEOS 280 LECTURE 9:40- 11:30 AM			
10:10 AM 10:20 AM 10:30 AM 10:40 AM 10:50 AM **11:00 AM**	GEOL 280 LECTURE 10:20 - 11:20 AM		GEOL 280 LECTURE 10:20 - 11:20 AM		GEOL 280 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**	GEOS 125 LECTURE 12:30- 1:30 PM		GEOS 125 LECTURE 12:30- 1:30 PM		GEOS 125 LECTURE 12:30- 1:30 PM
1:10 PM 1:20 PM 1:30 PM 1:40 PM 1:50 PM **2:00 PM**		GEOS 280 LECTURE 1:40- 3:30 PM			
2:10 PM 2:20 PM 2:30 PM 2:40 PM 2:50 PM **3:00 PM**					
3:10 PM 3:20 PM 3:30 PM 3:40 PM 3:50 PM **4:00 PM**					

SYLLABUS CALENDAR (*subject to change*)

This calendar is color-coded for your convenience: **Blue** = Quiz dates/Activity; **Orange** = Exam dates

MONTH	WEEK	DAY	TOPIC	READING/ ASSIGNMENT	-
AUG.		-	-	-	
	Week 1	21-Aug	**No Class**		INTRO
		23-Aug	**No Class**		
SEPTEMBER	Week 2	26-Aug	Syllabus Overview & Introductions	**Syllabus (GSA Scientific Method); Syllabus Quiz**	
		28-Aug	Intro to Environmental Science	**Article #1 (Env. Crisis in History)**	
		30-Aug	Systems, Matter, & Energy	**QUIZ #1**	
	Week 3	2-Sep	**LABOR DAY - NO CLASS**		BIOLOGICAL SCIENCES
		4-Sep	Intro to Ecosystems	Chapter 3	
		6-Sep	Intro to Ecosystems (continued)	**QUIZ #2**	
	Week 4	9-Sep	Defining Biomes	Chapter 3	
		11-Sep	Defining Biomes (continued)	Chapter 3	
		13-Sep	**REVIEW SESSION**		
	Week 5	16-Sep	**EXAM #1**		
		18-Sep	Biodiversity & Evolution	Chapter 4	
		20-Sep	Biodiversity & Evolution (continued)	Chapter 4	
OCTOBER	Week 6	23-Sep	**GSA CONFERENCE**		
		25-Sep			
		27-Sep			
	Week 7	30-Sep	Extinction & Population Dynamics	Chapter 4	
		2-Oct	Extinction & Population Dynamics (continued)	Chapter 4	
		4-Oct	Growth Models & Species Interactions	Chapter 4; **QUIZ #3**	
	Week 8	7-Oct	Ecological Succession	Chapter 4	GEOLOGICAL SCIENCES
		9-Oct	Biogeochemical Cycles	Chapter 3; **Quiz #4**	
		11-Oct	**EXAM #2**		
	Week 9	14-Oct	**FALL BREAK**		
		16-Oct			
		18-Oct			
NOVEMBER	Week 10	21-Oct	Rocks, Minerals, & Weathering (Part I)	**Article #2 (USGS Minerals)**	
		23-Oct	Rocks, Minerals, & Weathering (Part II)	Chapter 6	
		25-Oct	Mineral & Rock Resource Activity	**QUIZ #5**	
	Week 11	28-Oct	Soils and Soil Formation (Part I)	**Article #3 (SSSA Sustainable Soils)**	
		30-Oct	Soils and Soil Formation (Part II)	Chapter 6	
		1-Nov	Soil Remediation Activity	**QUIZ #6**	
	Week 12	4-Nov	Water Resources & Hydorlogic Cycle (Part I)	**Article #4 (GSA Water Resources)**	
		6-Nov	Water Pollution & Treatment (Part II)	Chapter 9	
		8-Nov	Water Resources Activity	**QUIZ #7**	
	Week 13	11-Nov	**EXAM #3**		ENERGY & CLIMATE CHANGE SCIENCE
		13-Nov	Energy Sources (Part I) (Nonrenewable)	Chapter 8 - **Article #5 (Battery Challenge)**	
		15-Nov	Energy Sources (Part II) (Renewable)	**QUIZ #8**	
DECEMBER	Week 14	18-Nov	Climate Change (Part I): Intro	Chapter 14	
		20-Nov	Climate Change (Part I): Paleoclimate Record	Chapter 14	
		22-Nov	Climate Change (Part I) (continued)	**Article #6 (MSA Energy)**	
	Week 15	25-Nov	**THANKSGIVING BREAK - NO CLASS**		
		27-Nov			
		29-Nov			
	Week 16	2-Dec	Climate Change (Part II): Current Patterns	Chapter 14	
		4-Dec	Climate Change (Part II): Current Patterns	Chapter 14	
		6-Dec	Climate Change (Part II) (continued)	**Review Session**	
	Week 17	12-Dec	**EXAM #4 Comprehensive: GEOS 125 - Dec. 12th (8:30-11:30am)**		

There are many professional societies and organizations that support the intersectionality of students in STEM (particularly the geosciences - e.g., GeoLatinas, National Association of Black Geoscientists, Association of Women Geoscientists, 500 Queer Scientists; Geoscience Alliance; etc.). Below, I've provided a list of ways to connect with these communities and organizations:

STEM General

- Association for Women in Science,
  Twitter: @AWISNational,
  Facebook:
  https://www.facebook.com/AssociationforWomeninScience
- Million Women Mentors
  Twitter: @MillionWMentors
  Facebook:
  https://www.facebook.com/MillionWMentors
- MentorNet
  Twitter: @MentorNetTweet
  Facebook: https://www.facebook.com/mentornet
- Pride in STEM,
  Twitter: @PrideinSTEM
  Facebook: https://www.facebook.com/PrideInSTEM/
  Instagram: https://www.instagram.com/prideinstem/
- 500 Queer Scientists
  Twitter: @500QueerSci
  Instagram:
  https://www.instagram.com/500queerscientists/
- Society for Advancement of Chicanos/Hispanics and Native Americans in Science, @sacnas
  Facebook: https://www.facebook.com/SACNAS
  Instagram: https://www.instagram.com/sacnas/
- American Indian Science and Engineering Society,
  Twitter: @AISES,
  Facebook: https://www.facebook.com/aises.org
  Instagram: https://www.instagram.com/aises_hq/
- Fab Fems,
  Twitter: @FabFems,
  Facebook:https://www.facebook.com/FabFems/wall/
- hollaback!
  Twitter: @iHollaback
  Facebook: https://www.facebook.com/ihollaback
  Instagram: https://www.instagram.com/ihollagram/

Atmospheric Sciences

- American Meteorological Society
  Twitter: @ametsoc
  Facebook: https://www.facebook.com/ametsoc
  Instagram:

Biology and Ecology

- Women in Bio
  Twitter: @WomenInBio
  Facebook: https://www.facebook.com/WomenInBio/
  Instagram:https://www.instagram.com/womeninbio/
- Black In Genetics
  Twitter: @BlackInGenetics
  Instagram: http://instagram.com/blackingenetics

Chemistry

- American Chemical Society Women Chemists Committee
  Twitter: @AcsWcc
  Facebook: https://www.facebook.com/acsnationalwcc/
  Instagram: https://www.instagram.com/acswcc/
- Chemical and Engineering News "Meet the Amazing Women of Chemistry"
  Twiiter: @cenmag
  Facebook: https://www.facebook.com/CENews
  Instagram: https://www.instagram.com/cenmag/

Computer Science

- Association for Computing Machinery - Women
  Twitter: @OfficialACMW
  Facebook: https://www.facebook.com/women.acm.org/
- IEEE
  Twitter: @ComputerSociety
  Facebook:
  https://www.facebook.com/ieeecomputersociety
  Instagram:
  https://www.instagram.com/ieee_computer_society/
- Girls Who Code https://girlswhocode.com
  Twitter: @GirlsWhoCode
  Facebook: https://www.facebook.com/GirlsWhoCode
  Instagram: https://www.instagram.com/girlswhocode/

Engineering

- LGBTQ+ in STEM
- Twitter: @ASEEDiversity
- Facebook: https://www.facebook.com/ASEEHQ/
- Black in Engineering
  Twitter: @BlkinEngineerng

Geosciences

- Association for Women Geoscientists
  Twitter: @AWG_org
- American Geophysical Union
  Twitter: @theAGU
  Facebook: https://www.facebook.com/AmericanGeophysicalUnion
  Instagram: https://www.instagram.com/americangeophysicalunion/
- Geological Society of America
  Twitter: @geosociety
  Facebook: https://www.facebook.com/GSA.1888
  Instagram: https://www.instagram.com/geosociety/
- Black In Geoscience
  Twitter: @BlkinGeoscience
- Latinas in Earth and Planetary Sciences
  Twitter: @GeoLatinas
  Facebook: https://www.facebook.com/pages/category/Charity-Organization/GeoLatinas-2295565757144615/
  Instagram: https://www.instagram.com/geolatinasinsta/
- Society of Latinx/Hispanics in Earth and Space Science
  Twitter: @GeoSpaceLatinx
- Earth Science Women's Network (ESWN)
  Twitter: @ESWNtweets
  Facebook: https://www.facebook.com/ESWNonline/
  Instagram: https://www.instagram.com/geosciencewomen/
- Diverse Geologists
  Twitter: @DiverseGeos
  Facebook: https://www.facebook.com/DiverseGeologists
  Instagram: http://instagram.com/diversegeologists
- Equality, Diversity, and Inclusion in Geoscience Project
  Twitter: @iCRAGcentre
  Facebook: https://www.facebook.com/icrag
  Instagram: https://www.instagram.com/icrag_centre/

Mathematics

- American Mathematical Society - Programs
  Twitter: @AWMmath
  Facebook: https://www.facebook.com/awmmath/
  Instagram: https://www.instagram.com/awmmath
- Caucus for Women in Statistics
  Twitter: @cwstat
  Facebook: https://www.facebook.com/cwstat
  Instagram: https://www.instagram.com/cwstat/

Mathematics (Continued)

- EDGE for Women:
  Twitter: @edge4women
  Facebook: https://www.facebook.com/edge4women/
  Instagram: https://www.instagram.com/edgeforwomen/
- CAARMS:
  Twitter: @ICERM
  Facebook: https://www.facebook.com/icerm/
  Instagram: https://instagram.com/icerm_brownu

Physics and Astronomy

- American Physical Society
  Twitter: @APSphysics
  Facebook: https://www.facebook.com/apsphysics
- American Institute of Physics
  Twitter: @AIP_HQ
- Women@NASA https://women.nasa.gov/
  Twitter: @WomenNasa
- National Society of Black Physicists
  Twitter: @NSBPInc
  Facebook: https://www.facebook.com/NSBPInc/
  Instagram: https://www.instagram.com/nsbpinc

Other Social Media:

Black and STEM (Twitter - @BLACKandSTEM)
FirstGenDocs (Twitter - @firstgendocs)
500 Queer Scientists (Twitter - @500QueerSci)
500 Women Scientists (Twitter - @500womensci)
Black AF in STEM (Twitter - @BlackAFinSTEM)
Black Women in STEM (Twitter - @BlackWomenSTEM)
Científico Latino: (Twitter - @cientificolatin)
ESA SEEDS: (Twitter - ESA_Seeds)
I'm First! (Twitter - @ImFirstGen)
LGBTQ+ STEM: (Twitter: @LGBTSTEM)
Me Too STEM: (Twitter - @MeTooSTEM)