GEOL4315/GEOL5378/GEOL6378 Global Biogeochemical Cycles – Syllabus

– Subject to change!

Lecture Meeting: Monday & Wednesday 4:30 - 5:50 pm in Geology Building 302

Lecture Instructor:
Dr. Haitao Shang
Office: 305C Geological Sciences Building (Inside Room 305A Geological Sciences Building)
Email: hshang@utep.edu
Office Hours: 3:30-4:30 pm on Mondays & Wednesdays

Textbooks for references only (NOT required):
Biogeochemical Cycles and Climate by Han Dolman
Earth System Science: From Biogeochemical Cycles to Global Change edited by Michael C. Jacobson Robert J. Charlson Henning Rodhe Gordon H. Orians

Course Grading:

Attendance (10%)
Class Assignments & Presentations (30%)
Final Project: Proposal & Midterm and Final Presentation & Written Report (60%)

Requirements of Written Report for Final Project:

- **Formatting**
  - 1-inch margins on all sides
  - Times New Roman, 12-point font
  - Single-spaced
- **References**
  - Author–Year citation style
  - Not included in the page limit
- **Figures & Supplementary Material**
  - Maximum of 5 figures in the main paper
  - Supplementary documents (e.g., notes, figures, tables, code) are allowed and do not count toward the page limit

Important Notes:

1) Course Drop Deadline: October 31, 2025:
2) The College of Science will not approve any student- or faculty-initiated drop requests for a course after the Course Drop Deadline, except under circumstances of complete withdrawal of all courses due to medical or non-medical reasons.
3) There is no make-up for **unexcused** Assignments and Presentations or late turn-in of Final Projects. *See below on how to be excused from absence/late arrival to class*
4) If you think you may have a *disability or if you are experiencing learning difficulties*, please let Dr. Haitao Shang know & contact the Center for Accommodations and Support Services (CASS), East Union Bldg, Room 106; Phone: 915-747-5148; Email: cass@utep.edu ;
Website: https://www.utep.edu/student-affairs/cass/

Cheating/Plagiarism:
Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording; it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy.
Refer to http://www.utep.edu/dos/acadintg.htm for further information.

This is important for your Final Projects – make sure that they are 'yours', even if you are working in teams. This is also critical for the use of modern AI tools such as ChatGPT.

ChatGPT Usage Rule
ChatGPT may be used to improve writing, generate ideas, and address technical questions that aid your research. It must not be used to produce your proposal, report, or final paper, whether in part or in full. Any inappropriate use will be detected.

Excused Absences:
Valid excuses include illness, absence with the instructor's prior approval, official University business, etc. Accommodations are possible for active-duty military and others, but arrangements must be made in a timely manner. If you are in the military with the potential of being called to military service and /or training during the course of the semester, you are encouraged to contact Dr. Haitao Shang as soon as possible.

How to be excused for absence or being late to class:
• Apply to be excused by writing an email to Dr. Haitao Shang at hshang@utep.edu explaining your absence
• Subject line MUST include (in this order): Global Biogeochemical Cycles – YOUR NAME – Date of absence
• If an absence is foreseeable (examples: a job interview, professional meeting, surgery, etc.): before the absence
• If an absence was not foreseeable (examples: migraine, car crash, childbirth, being arrested): asap, when it can be done safely (do not text and drive!).
Not finding a parking spot is NOT an excuse – it is bad planning.
• Students must ensure that they have been excused for an absence in a timely fashion.

TENTATIVE SCHEDULE OF LECTURE TOPICS
– Subject to change!

Date	**Topic**
Week 1	
August 25	**Why are you here? – Expectations & Syllabus Overview**
August 27	**An Overview of the Earth and Life Systems and Biogeochemical Cycles**
Week 2	
September 1	**Holiday – No Class**
September 3	**Basic Concepts in Biogeochemistry – Part 1**
Week 3	
September 8	**Basic Concepts in Biogeochemistry – Part 2**
September 10	**Materials and Components of Biogeochemical Cycles – Part 1**
Week 4	
September 15	**Materials and Components of Biogeochemical Cycles – Part 2**
September 17	**Biogeochemical Cycles in Earth Systems**
Week 5	
September 22	**Isotopic Geochemistry for Biogeochemical Cycles – Principles**
September 24	**Isotopic Geochemistry for Biogeochemical Cycles – Applications**
Week 6	
September 29	**Carbonate Geochemistry & Weathering – Part 1**
October 1	**Carbonate Geochemistry & Weathering – Part 2**
October 1	**Deadline of Proposal for Final Project**
Week 7	
October 6	**Carbon Capture and Storage**
October 8	**Microbial Metabolisms in Biogeochemical Cycles – Part 1**
Week 8	
October 13	**Microbial Metabolisms in Biogeochemical Cycles – Part 2**
October 15	**Essentials of Photosynthesis**
Week 9	
October 20	**RuBisCO (The Most Abundant Enzyme on Earth)**
October 22	**Deep-Time Biogeochemical Cycles - Part 1**
Week 10	
October 27	**Midterm Presentation of Selected Topic for Final Project**
October 29	**Deep-Time Biogeochemical Cycles - Part 2**

Week 11
November 3 **Feedback Mechanisms in Biogeochemical Cycles**
November 5 **Examples of Feedback in Biogeochemical Cycles**

Week 12
November 10 **Fundamental Physical Principles for Biogeochemical Cycles – Part 1**
November 12 **Fundamental Physical Principles for Biogeochemical Cycles – Part 2**

Week 13
November 17 **Basics of Bioinformatics for Biogeochemical Cycles – Part 1**
November 19 **Basics of Bioinformatics for Biogeochemical Cycles – Part 2**

Week 14
November 24 **Mathematical Modeling of Biogeochemical Cycles – Part 1**
November 26 **Mathematical Modeling of Biogeochemical Cycles – Part 2**

Week 15
December 1 **Final Project Presentations – Part 1**
December 3 **Final Project Presentations – Part 2**

December 5 **Deadline for Written Report of Final Project**