

Syllabus Labs for Historical Geology (GEOL 1314): GEOL 1104



INSTRUCTOR

Dr. Benjamin Brunner
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Earth, Environmental and Resource Sciences
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MEETING PATTERN & LOCATION

Lab for GEOL 1314: *GEOL 1104 CRN 11978 (currently 16 students)*

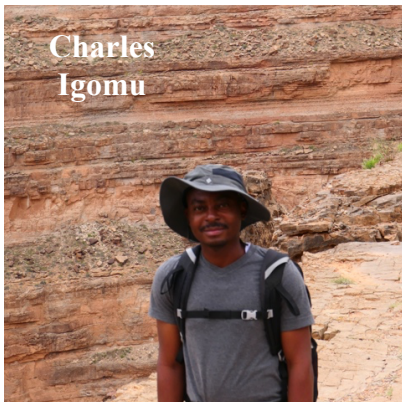
- Lab Leader/Teaching Assistant: Charles Igomu (coigomu@miners.utep.edu)

GEOL 1104 CRN 11978 – Tue 8:30-10:20 AM Geology Building 404

First meeting: Wednesday, September 6, 2023

Please note Dr. B's Killer Rules:

- More than 2 missing/unexcused assignments OR no-shows/late to class: **you are out!**
Make sure to sign in at the begin of the lab!
- Classroom etiquette – after two warnings (e.g., disruptive behavior, social media use): **you are out!**



OFFICE HOURS

By appointment via email to Dr. Brunner (bbrunner@utep.edu)

GRADES

100% assignments given in the lab – most assignments can be completed within time allocated for the lab. Your active participation is of utmost importance.

COURSE DESCRIPTION

This laboratory course will serve as an introduction to topics in Historical Geology and help promote a basic understanding of elements of geologic time and principles of relative age dating of geologic events and the relation to ancient environments. The major geologic eras, periods, and epochs are discussed and related to ancient tectonic events and fossil occurrences.

REQUIRED LABORATORY MATERIAL

- There will be handouts & material posted Blackboard.
- You need to have laptop/tablet to do calculations and make presentations
- We recommend a subscription (free) to ChatGPT (<https://chat.openai.com/chat>) or similar

COURSE OBJECTIVES

Students will learn by observation and application of principles of Historical Geology to understand how to apply their knowledge in a laboratory environment to further understand principles related to the history of life and events that shaped the Earth.

YOUR PARTICIPATION IS ESSENTIAL

Please contact Dr. Brunner about any concerns, schedule conflicts, etc. in advance or otherwise as soon as possible! A significant portion of your grade is based on participation, so ***any missed classes and assignments must have proper documentation, or your grade will drop.*** 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 the instructor as soon as possible.

If you think you may have a ***disability or if you are experiencing learning difficulties***, please contact the Center for Accommodations and Support Services (CASS), East Union Bldg, Room 106:

Office: 915-747-5148 / Email: cass@utep.edu / <https://www.utep.edu/student-affairs/cass/>

How to be excused for absence or being late to the Lab:

- Apply to be excused by writing email to BOTH Dr. Brunner bbrunner@utep.edu AND the TA in your lab,
- Charles Igomu (coigomu@miners.utep.edu)
- Subject line MUST include (in this order): Hist Geol 1104 – YOUR NAME – Date of absence
- If absence is foreseeable (examples: job interview, surgery, wedding): before the absence
- If absence was not foreseeable (examples: migraine, car crash, childbirth, being arrested): asap, when can be done safely (do not text and drive!). Not finding a parking spot is NOT an excuse – it is bad planning.
- Student must ensure that excuse for absence has been granted, i.e. must have received email with confirmation of excuse of absence from Dr. Brunner or the TA responsible for the class. Dr. Brunner is fully responsible for granting the absence – please do not try to ‘convince’ your TA, it is not going to help.
- Please check BlackBoard for examples on how to get excused from absences/being late

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 Individual Concept Sketches – make sure that they are ‘yours’, even if you work in teams.

This is also critical for the use of modern AI tools such as ChatGPT.

LIST OF TOPICS – *subject to change! – and you can help deciding on what we will do!*

1. How to make a concept sketch
2. Rocks & minerals
3. Fossils
4. Plate boundaries, sedimentation, unconformities, deduce number and order of geological events based on cross-cutting relationships
5. Relative and absolute age dating, radioactive decay
6. Geological maps, 3-D thinking
7. What is a geological formation? And how to geologist visualize things in their brains? – We combine this with completing puzzles of the North & South Rim of Grand Canyon
8. Mid-semester jeopardy
9. Properties of materials: the density and heat capacity of various materials
10. Using your cell phone to document science, search for information, special geo-applications, and cell-phone attachments
11. Geochemistry I: pH (of beverages), splitting of water into H₂ and O₂ (with impact on pH), what dissolves? – ions (NaCl) vs. sugar.
12. Geochemistry II: the great oxidation event, boring billion, and stinky oceans (sometimes we do these experiments in the lab, sometimes in the classroom, depends on class size, interests shown by students)
 - a. ferrous ocean
 - b. oxidize pyrite
 - c. truly toxic stuff (sulfide)
 - d. Oceanic Anoxic Event experiment
13. Eutrophication of a lake by addition of phosphorous, triggering algal growth – phosphorous positive feedback loop, a thought-process
14. Numerical modeling
15. Diffusion and advection: Background from the classroom is the invention of skeletons and why this is partially tied to the evolution of multicellular organisms. Using a set of simple assumptions, including that food is delivered to organisms by diffusion we try to figure out what shape and size is energetically optimal for a single-cell organism.
16. Time travel: time travel back to a certain geological interval and provide a travel guide (what was going on, how to protect yourself, what to bring, what to study) to the entire class.
17. Research and present to the class some parts of human evolution
18. End-semester jeopardy – see 7