

**SYLLABUS
GEOLOGY 2110C
Historical Geology
FALL 2023**

Instructor: Chuck Schick, PG, LPG

Email: cschick@unm.edu

Office Hours: Health Sciences Rm 111 Tues 2-3PM or by request. When you need a meeting, we will find a way to meet. MS Teams, etc. can also be used.

Class Times: Tuesday and Thursday 3:00 pm to 4:30 pm

SCHEDULE

WEEK	Week of	TOPICS
1	Aug 20	Introduction to the class. Scientific Method Laws, Theory's, and models. Know the difference. What is historical geology and how is different than physical geology? Basic Rock types and minerals and their importance to historical geology
2	Aug 27	Rock types and minerals (continued) Plate tectonics a unifying theory for geology
3	Sep 4	Geologic Time, the Eras, epochs, periods. Select Research Topics in class
4	Sep 11	Fossils, relative dating, and radiometric dating. Why we can't always use radiometric techniques.
5	Sep 18	Sedimentary Rocks
6	Sep 25	Stratigraphic units, facies, correlation, unconformities
7	Oct 2	TEST #1 Relative age vs radiometric and how nonconformities permit it.
8	Oct 9	Stratigraphic features, fluvial, aeolian, grain size, sorted, graded, and unsorted. What does it mean?
9	Oct 16	Interpreting depositional environments Turn in your research project outline and references
10	Oct 23	Natural selection and Paleontology
11	Oct 30	Precambrian and before. (the history before visual fossils appear in the rock record)
12	Nov 6	TEST #2 Paleozoic Era
13	Nov 13	Mesozoic Era
14	Nov 20	Cenozoic Era
15	Nov 27	Recent Features like glaciation, magnetic reversals, etc. (last few million years)
16	Dec 4	TEST #3 Present special Research Projects in class (poster session) Final Exam Review
	Dec 11	FINAL EXAM !!!

Course Textbook: Historical Geology Evolution of the Earth & Life through time. R. Wicander and J. Monroe. ISBN 978-1-305-11956-7

Course Description

This course reviews the major geological and biological processes and events over the Earth's 4.6-billion-year history. Students will learn about the formation of the Earth and its development through time including changes in the lithosphere, atmosphere, hydrosphere, and biosphere. The interrelationships between the physical aspects of Earth history and biological origins, evolution of species, and causes of extinctions will be explored.

Objectives:

1. List the major principles of stratigraphy and biostratigraphy and discuss their significance.
2. Recognize or explain how sedimentary rocks can be used to interpret ancient environments.
3. Recognize or explain how plate tectonics has affected the distribution of life, climate, and sea level.
4. Describe the process of natural selection and knowledge of biodiversity.
5. Discuss the major mass extinctions recorded by fossil evidence including potential causes and organisms affected.
6. Compare relative versus absolute time and explain how geologists determine the ages of rocks, fossils, and the Earth.
7. Discuss the development of the geologic time scale.
8. Recognize or explain the history of life on Earth during major time periods and describe major biological innovations through time.
9. Recognize or explain the physical geologic evolution of Earth over time.

Make-up Tests: No Make-up Exams. See Grading Policy below.

Grading Policy:

There are Three (3) Tests and a FINAL Examination for a grand total of four (4). These tests count for 60% of your grade. The Research Project will count for 25%. Participation and Reading quizzes will constitute the remaining 15%. Quizzes are unscheduled and I will increase their frequency if I sense the class is not reading ahead of class. You may drop the lowest test score (Best 3 out of 4 Exams). Poor attendance could RESULT IN YOU BEING DROPPED from the class. And NO EXTRA CREDIT.

RESEARCH PROJECT (and Presentation)

During this class we will be covering several topics but not all. The research project permits you to explore a subject that interests you in greater detail. Be creative. This is a chance to incorporate other skills into your project. You will turn in a 1-page summary or your topic (with an outline) and **WITH REFERNCES** for your research project.

Attendance:

The school policy will be followed. Therefore, not showing up for class could result in the “system” dropping you from the class. You should attend class regularly and get your notes. I don’t give out notes. Part of your education is to process lecture material and put it into your own notes. If you are not going to attend class, please let me know **BEFORE CLASS**. **Lack of attendance will most likely reflect poorly on your final grade.**

Plagiarism/Cheating:

I encourage you to talk with one another about assignments before, and while, you do them, but all submitted work must be your own. In addition, if you copy information from textbooks, newspapers, the internet or other media sources you must cite them as your source of information. Blatant copying (plagiarism) will result in a score of zero for all students involved. A second offense will result in you receiving an F for this course. I would like to draw your attention to: [The University of New Mexico’s policy on “Dishonesty in Academic Matters”](#):

Access/ACCOMMODATIONS:

If you have a documented disability, the Equal Access Services office will provide me with a letter outlining your accommodation. I will then discuss the accommodation with you to determine the best learning environment. If you feel that you need accommodations, but have not documented your disability, please contact Sarah Clawson, the coordinator for Equal Access Services at 925-8840 or sjclawson@unm.edu.

Electronic Devices:

To the benefit of you, your classmates and the learning environment **please turn off** electronic devices alarm, bell, buzzer, music etc. while you are in class. Your cooperation in these matters is appreciated by all.

Title IX: See <http://www2.ed.gov/about/offices/list/ocr/docs/> for information regarding these rules for a safe classroom for both students and teachers. Also, the Office of Equal Opportunity (oce.unm.edu) provides more information regarding these matters.

COVID 19 ISSUES:

NONE. But please, if you are truly sick and contagious with anything, don’t come to class and pass it on to your classmates (and instructor 😊). Be respectful of your fellow classmates.

Final Exam:

According to the UNM master schedule is Tuesday Dec 12, at 3:00pm

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Office Hours: Health Sciences Rm 108 Monday 3:30-4:30 pm Tues 2-3pm and Thursday 2-3PM or by request. When you need a meeting, we will find a way to meet.

Class Times: Thursday 4:45pm to 6:45 pm

SCHEDULE

WEEK	Week of	TOPICS
1	Aug 20	Basic Rocks and minerals (Exercise 0)
2	Aug 27	More Basic rock types and minerals of interest, unconformities and superposition (Exercise 1)
3	Sep 4	More Basic rock types and minerals of interest and relative dating Exercise 1)
4	Sep 11	Radiometric (Dating Exercise 2)
5	Sep 18	Geologic maps (those colorful posters on the wall) (Exercise 13)
6	Sep 25	Plate tectonics (Exercise 11)
7	Oct 2	Sedimentary rock analysis (Exercise 3)
8	Oct 9	Sedimentary Rocks Depositional environments (Exercise 4)
9	Oct 16	Physical Correlation (Exercise #6)
10	Oct 23	Facies Relationships and Sea Level Change (Exercise #7)
11	Oct 30	Fossils and Fossilization (Exercise #8)
12	Nov 6	Patterns of Evolution (Exercise #9)
13	Nov 13	Index Fossils and Depositional sequences (Exercise #12)
14	Nov 20	Pleistocene Glaciation (Exercise #20)
15	Nov 27	Thanksgiving NO LAB
16	Dec 4	Wrap-up

Course Textbook: Interpreting Earth History: manual in historical geology, Ritter & Peterson, 9th Edition.

Course Description:

Historical Geology Laboratory is the laboratory component of Historical Geology. This course applies geologic principles and techniques to reconstruct the history of Earth. Students will explore key concepts of geologic time and stratigraphy, identify fossils and use fossils to make stratigraphic correlations. Students will employ actualism to determine past depositional environments.

Student Learning Outcomes

1. Explain or discuss geologic time and how the geologic time scale was developed.
2. Recognize or explain how geologic time is measured.
3. Describe and use the basic principles of stratigraphy and explain how stratigraphy can be used to interpret sedimentary environments.
4. Describe and use the basics of paleontology and how fossils can be used to interpret ancient sedimentary environments.
5. Identify fossils in hand samples and explain how organisms are preserved in the fossil record.
6. Identify, explain, or interpret geologic structures on geologic maps.
7. Reconstruct the history of geologic events using geologic maps and cross-sections.
8. Construct cross-sections, fence diagrams, and isopach maps from stratigraphic sections and thickness data.

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Grading Policy:

Turn in your lab work weekly. Previous week’s assignment is due at the next laboratory class. There will be two quizzes to assess your retention of very basic principles of the class.

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Final Exam:

None. Grade is based on class participation and completion of lab exercises.