

EPS 201L-501 Spring 2019 - Earth History

Instructor: Dr. Kevin Hobbs **Email:** khobbs84@unm.edu **Office:** A-132A **Phone:** 925-8876
Office hours: M 10:30-12:00; T 10:30-12:00; W 1:00-2:45

Class time and location: Lecture: Tuesday & Thursday 8:45-9:59 in VAHS108

Lab: Thursday 10:00-11:59 in VAHS108

Textbooks: *Earth Systems History*, 4th edition by S.M. Stanley and J.A. Luczaj; Freeman Publishing
Interpreting Earth History, 8th edition by S. Ritter and M. Petersen, Waveland Press

Supplies needed: Notebook or binder with lined paper, pencils; some students prefer different colors of pens/pencils for note-taking and diagrams.

Course description:

This course introduces the student to historical geology, the discipline concerned with applying the principles and techniques of geology to understand the geological history of Earth. Major topics include the origin and evolution of Earth, plate tectonics, stratigraphy, paleontology, biological evolution, and geological dating. This course is intended for students with an interest in geoscience and those majoring in geology, environmental science, or civil engineering.

Course Goals:

Students who successfully complete this course will have a fundamental understanding of geological time, evolutionary theory and the fossil record, plate tectonic theory, geological dating, and stratigraphy. In addition, students will be able to identify and interpret important rock, mineral, and fossil specimens; analyze and interpret topographic and geological maps; analyze, interpret, and produce geological cross-sections; and interpret stratigraphic columns.

Student Learning Objectives (SLOs):

1. By the end of the course, students will be able to use data obtained from rocks to interpret and write about events in Earth history. (Relates to UNM/HED Area 3, Competencies 2 and 5)
2. Students will be able to explain how the age of Earth and the ages of events in Earth history are determined. (Relates to UNM/HED Area 3, Competency 4)
3. Students will be able to explain, apply, and evaluate the evidence provided by fossils for biological evolution. (Relates to UNM/HED Area 3, Competencies 1 and 2)
4. Students will be able to explain how plate tectonics accounts for the major features of Earth's surface. (Relates to UNM/HED Area 3, Competency 3)
5. Students will be able to explain the natural processes that cause climate change over time scales of millennia to many tens of millions of years and put these processes in context with modern climate change influenced by human activities. (Relates to UNM/HED Area 3, Competencies 3, 5)
6. Students will be able to explain the processes that control surface and deep ocean circulation patterns and how circulation changes influence the global climate. (Relates to UNM/HED Area 3, Competency 2)

Attendance:

Attendance is required at each class meeting. *Attendance is taken before the start of each class. To be late is to be absent.* Students with 3 consecutive absences or 4 absences overall may be dropped from the course. Students with 2 absences in the first three weeks of class will be dropped from the course. There are no excused absences. If you are forced to miss a class due to an emergency, you are encouraged to get notes and materials you missed from a classmate and read the assignment for that day.

EPS201L Week-by-Week Schedule of Topics and Assignments

Subject to Change

<i>Week</i>	<i>Date</i>	<i>Topic</i>	<i>Assignments</i>
1	Jan. 15 Jan. 17 Jan. 17	Course introduction – Historical vs. physical geology Rock types Lab: review of Geology 101 fundamentals	Ch. 1 & 2
2	Jan. 22 Jan. 24 Jan. 24	Review and intro to stratigraphy Principles of sedimentology and stratigraphy Lab: Analysis of sed. rocks (Exercise 3)	Ch. 2 - Online Quiz01 Ch. 5 Exercise 3
3	Jan. 29 Jan. 31 Jan. 31	Stratigraphic correlation Walther's Law; facies change in time and space Lab: Stratigraphy (Exercise 5)	Ch. 5 & 6 – Online Quiz02 Ch. 6 Exercise 5
4	Feb. 5 Feb. 7 Feb. 7	Facies change; correlation in time and space Dating with index fossils Lab: Facies relationships (Exercise 7)	READ Exercises 6 & 7 – Quiz03 Ch. 7; READ Exercise 12 Exercise 7
5	Feb. 12 Feb. 14 Feb. 14	Fossilization; the fossil record through time Evidence of evolution in the fossil record Lab: Fossils (Exercise 8)	Ch. 3 and 7 – Online Quiz04 READ Exercise 9 Exercise 8
6	Feb. 19 Feb. 21 Feb. 21	EXAM #1 Plate tectonic theory; paleomagnetism Lab: Plate tectonics (Exercise 11)	Ch. 8 – Online Quiz 05 Exercise 11
7	Feb. 26 Feb. 28 Feb. 28	Tectonics and geological structures Geological structures; relative dating; Steno & Hutton Lab: Geological maps (Exercise 13)	Ch. 8 & 9 – Online Quiz06 Ch. 9; online resources TBD Exercise 13
8	Mar. 5 Mar. 7 Mar. 7	Radiometric dating Radiometric dating Lab: Radiometric ages (Exercise 2)	Ch. 5 + TBD – Quiz07 Exercise 2
9	Mar. 12 Mar. 14	NO CLASS – SPRING BREAK	
10	Mar. 19 Mar. 21 Mar. 21	Intro to NM geological history New Mexico geologic map Lab: New Mexico geologic maps (not in lab book)	TBD - Online Quiz08 TBD NM geology lab exercise
11	Mar. 26 Mar. 28 Mar. 28	The Precambrian: Hadean and Archean Eons The Precambrian: Proterozoic Eon Lab: Canadian Shield (Exercise 14)	Ch. 11 - Online Quiz09 Ch. 12 Exercise 14
12	Apr. 2 Apr. 4 Apr. 4	The Early Paleozoic – EXAM #2 (take-home) The Middle Paleozoic Lab: Paleozoic Orogenies (Exercise 15)	Ch. 13 – Online Quiz10 Ch. 14 Exercise 15
13	Apr. 9 Apr. 11 Apr. 11	The Late Paleozoic The Penn-Perm in New Mexico Lab: Reconstructing New Mexico 300 m.y.a.	Ch. 15 Lit. TBD – Online Quiz11 TBD; lab will be provided
14	Apr. 16 Apr. 18 Apr. 18	The Early Mesozoic (Triassic and Jurassic) The Cretaceous Lab: Cordilleran Orogeny (Exercise 16)	Ch. 16 – Online Quiz12 Ch. 17 Exercise 16
15	Apr. 23 Apr. 25 Apr. 25	The Paleogene Period The Neogene Period Lab: Glaciation (Exercise 19)	Ch. 18 – Online Quiz13 Ch. 19 Exercise 19
16	Apr. 30 May 2 May 2	Isotopic records of change Tome Hill mini field trip (lecture and lab combined @ Tome Hill or other site)	Readings TBD Be there or be square
Finals	May 9	FINAL EXAM 9:00 A.M.	Exam #3

A note on class schedule: The schedule included above will serve as a general outline for the semester. Dates and topics might change as needs arise. Changes will be posted ASAP.

Field Trip:

There is a required field trip in this course. Two field trips will be offered; attendance at at least one is mandatory, though you are welcome to attend both. These field trips will take place on either Friday, 1 March or Saturday, 2 March; and Saturday, 6 April, or Sunday, 7 April. Both will be day-long trips; transportation will be provided. One field trip will visit the Quebradas Backcountry Byway east of Socorro, New Mexico; the other will visit San Lorenzo Canyon, ~48 km south of Belen near Alamillo, New Mexico. The Quebradas trip will be mostly in cars with very limited hiking on relatively even terrain, with some short walks to overlooks and outcrops. The San Lorenzo Canyon trip will involve more hiking (~3 miles) on uneven terrain. On either trip, you should be prepared with food, water, and clothing appropriate for the predicted weather conditions. The field trip report is worth 5% of your final grade. If there are geological field sites you would like to visit this semester, please let your instructor know – the field almost always beats the classroom!

Grading:

Exams: 3 tests	39%
Labs: 12 labs	35%
Assignments: 8 assignments	10%
Field trip report:	5%
Fossil of the month:	3%
Name that rock:	3%
Reading quizzes:	10%
<hr/> TOTAL	100%

Grade scale:	98+ = A+	92-97 = A	90-91 = A-	
	88-89 = B+	82-87 = B	80-81 = B-	
	78-79 = C+	72-77 = C	70-71 = C-	
	68-69 = D+	62-67 = D	60-61 = D-	0-59 = F

To receive a grade of A+, a student must complete every assignment and have perfect attendance in addition to receiving sufficiently high marks on exams, labs, assignments, and reports.

Exams:

Exams cover all materials covered since the last exam. Each exam is worth 13% of the total grade for the class. Exams will contain multiple choice, short answer, and interpretive questions.

In-class and homework assignments:

A total of 10% of the final grade will be based on in-class and homework assignments. Some of these will require discussion and/or collaboration with your classmates. Due dates for homework assignments will be posted when the assignment is given.

Reading quizzes:

There will be an in-class or online reading quiz most weeks. These quizzes will be based upon the assigned readings from the textbook and other sources. Online quizzes must be completed before class.

Extra credit:

As in life, there is no extra credit in this class.

Communication:

Official communication regarding this course will be through the UNM email system, using the UNM email address on file for each student. You must check this email frequently in order to stay abreast with the course schedule.

Reading:

This course covers a broad range of topics from many fields of Earth science. It would be impossible to give fair treatment to all topics with lectures alone. Therefore, successful students must read from the textbook and other sources in preparation for class meetings. It is essential to read *before* class meetings. Most online quizzes will be taken from the reading materials that will be discussed in class on the due date of the online quiz. I encourage you to take notes while reading, including writing down questions that arise during reading that you would like to discuss in class. Re-reading after the class meeting has been shown to improve comprehension and success.

Office hours:

While my “official” office hours are listed at the top of this syllabus, you are welcome to stop by my office at any time. My door is always open, and I am here to help you in any way that I can. If you are having trouble catching me in my office, email or phone me so that we can arrange a meeting.

Plagiarism and cheating:

Discussion of ideas is a crucial skill in science, and I encourage you to talk with one another about the topics and assignments in this class. However, all work that you submit must be your own. If you use information from outside resources, such as the textbook, newspapers, the internet, or journals, you must cite it. Plagiarism will result in a “0” on the assignment. If you are concerned about what does or does not constitute plagiarism, I’m happy to help – just ask me after class, via email, or in office hours.

Electronic devices:

Do not use cell phones during class, even for checking texts. Mute or turn off anything that can provide any distraction before class begins.

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered “responsible employees” by the Department of Education (see pg 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf>). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>