GEOL 1110-501 Fall 2019 - How the Earth Works: An Introduction to Geology
"Civilization exists by geological consent, subject to change without notice." ***Will Durant***

Instructor: Dr. Kevin Hobbs **Email:** khobbs84@unm.edu **Office:** A-132A **Phone:** 925-8876
Office hours: T 10:30-12:00; W 8:00-10:15; W 12:45-1:30; Th 10:30-12:00
Class time and location: Mon. & Wed. 10:30-11:45 in VAHS 101 ("Health Sciences Room 101")
Textbook: *Earth: Portrait of a Planet* by Stephen Marshak; Norton Publishing – 4th, 5th, or 6th ed.
Supplies needed: Notebook or binder with lined paper, pencils; some students prefer different colors of pens/pencils for note-taking and diagrams. You do not need to bring textbook to class.

Schedule

Week	Date	Topic	Reading
1	8-19	Introduction; why study geology?	Prelude; Ch. 3
	8-21	Plate tectonic theory	Ch. 4, online resources
2	8-26	Earth composition	Ch. 2
	8-28	Paleomagnetism & Earth's magnetic field	Ch. 3 and 4, online resources
3	9-2	**LABOR DAY – NO CLASS**	
	9-4	Drivers of plate motion – **Mini-exam**	Ch. 4
4	9-9	Minerals	Ch. 5
	9-11	Intro to rocks; igneous rocks	Ch. 6, online resources
5	9-16	Magma; lava; igneous rocks	Ch. 6
	9-18	Sedimentary rocks	Ch. 7; Interlude B
6	9-23	Sedimentary rocks	Ch. 7; Interlude B
	9-25	**EXAM #1**	
7	9-30	Rock cycle & metamorphism	Ch. 8, Interlude C
	10-2	Rock cycle review	Ch. 8, Interlude C
8	10-7	Geologic time	Ch. 12, online resources
	10-9	Dating	Ch. 12
9	10-14	Dating	Ch. 12
	10-16	Structural geology	Ch. 11
10	10-21	Structural geology	Ch. 11, online resources
	10-23	Orogeny and mountain belts	Ch. 11; Ch. 8 if needed
11	10-28	Interpreting geologic maps	Online resources
	10-30	Seismology, continued	Ch. 10
12	11-4	**EXAM #2**	
	11-6	Volcanoes	Ch. 9
13	11-11	Volcanoes of New Mexico	Online resources
	11-13	Hydrocarbons and energy resources	Ch. 14
14	11-18	Energy resources	Ch. 14
	11-20	Reconstructing NM's past w/ coal and oil	Online resources
15	11-25	Groundwater	Ch. 19
	11-27	Groundwater	Ch. 19, online resources
16	12-2	Karst	Ch. 19; online resources
	12-4	New Mexico groundwater	Online resources
17	12-9	**FINAL EXAM, 10:30 A.M.**	

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.

Course Goals (these are what your instructor wants for you to get out of the course):

1. *To introduce the principles and processes of science using Earth science as a guide.*
   Familiarity with the scientific method benefits individuals, communities, and societies.

2. *To present Earth science and the methods by which it is studied and practiced.*
   Understanding of Earth's composition, history, and processes lead to more informed consideration other sciences as well as arts, cultures, and human histories.

3. *To introduce students to the importance of Earth science on individuals and societies at the local, regional, and global scale*
   Each of us plays a role in our environment, and we have impacts on it in addition to being impacted by it. As Earth scientists, we seek to understand better these impacts and to be able to make reasoned considerations of the geological issues facing us and our society.

Student Learning Outcomes (mandated by the state Higher Education Department):

1. Recall, describe or explain geologic vocabulary.
2. Identify or explain aspects of the geologic time scale and compare the uses and limitations of relative and absolute dating.
3. Recognize or explain the evidence used to support the theory of plate tectonics. Describe or identify how plate tectonics is related to the structure and features of the Earth.
4. Describe the formation of, and describe, compare, and classify minerals.
5. Identify or describe the three main rock types, how each forms in the context of the rock cycle and what each indicates about its environment of formation.
6. Recognize or explain the fundamentals of surface and groundwater hydrology and discuss the impact of human activities on water quality and quantity.
7. Describe or discuss the processes that are responsible for specific geologic hazards (e.g., earthquakes, volcanic eruptions, mass movement, flooding, etc.).
8. Recognize or describe the geologic processes involved in the formation and concentration of geologic resources.

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, you are encouraged to get notes and materials you missed from a classmate and read the assignment for that day.

Grading:

Tests: 3 exams	45%
Assignments: 8 in-class and homework assignments	35%
Weekly reading quizzes	20%
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

Exams:
Exams cover all materials covered since the last exam. Each exam is worth 15% 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 35% of the final grade will be based on eight 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. At the end of the semester, your lowest quiz score is omitted.

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

Late work policy:
The policy for late assignments on homeworks and in-class assignments will be stated on each assignment/homework. Because reading quizzes are posted a minimum of 48 hours prior to the due date, late quizzes are not accepted.

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. To encourage you 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.

There are a number of old geology textbooks and lab manuals available for use in the STEM Center (if you don't know where this is, just ask! It's in the same building as the library.) Getting a perspective different from the one in the official textbook can be useful.

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. You will be asked to leave class if using electronic devices at inappropriate times.

The following statements are included at the suggestion of UNM administration:

Accessibility:

"In accordance with University Policy 2310 and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as I am not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Resource Center at 277-3506 for additional information. If you need an accommodation based on how course requirement interact with the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format and requirements, anticipate the need for adjustments and explore potential accommodations. I rely on the Disability Services Office for assistance in developing strategies and verifying accommodation needs. If you have not previously contacted them I encourage you to do so."

Title IX:

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