GEOL 1110 Physical Geology syllabus

Fall 2020

Section 501, 3 credits **In-person: Tuesday 10:30 am - 11:45 am, VAHS 101**
Remote learning: Thursday 10:30-11:45

PROFESSOR: Dr. Benjamin Burnett
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OFFICE HOURS: Tuesday 11:45-12:45 and 2:45-4:00 in VAHS 108 or ***by Zoom appointment - please email***

Class format: This class will meet in-person on Tuesdays starting on January, 26 2021. In-person classes are subject to change based on COVID-19 concerns and restrictions (more information on the next page). You will also be expected to participate online on Thursdays during class time. You should check your email and the class website by 10:30 to see what is required for that day.

This course is an introduction to **Geoscience,** where we take a comprehensive view of the materials, processes, and history of the Earth. We will investigate how mountains are formed, how volcanoes erupt, where earthquakes occur, and how water, wind, and ice can shape the landscape. We also consider the importance that earth materials and processes have on humans and the impacts that human activities have on Earth systems, both globally and locally. We will examine environmental change at both local and global scales from a scientific standpoint.

Student Learning Outcomes

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.
9. Describe atmospheric circulation and the processes that control Earth's weather and climate.
10. Recognize the role that climate change plays on Earth's biota and extinction rates in the modern Earth system and throughout Earth history.
11. Understand the scientific method and recognize the importance of fact-based reasoning and decision making, both quantitative and qualitative.

UNM Learn CLASS PAGES: Log in at: https://learn.unm.edu with your UNM CIRT username and password to access this site. It holds the syllabus, schedule, lecture outlines and graphics, and your grades (posted confidentially). Exams and problems will be given there.

TEXTBOOK: Earth: Portrait of a Planet, by Stephen Marshak. Editions 4-6 are all acceptable.

Reading the assignments on time is essential. Please bring up questions from readings in class.

CLASS CONDUCT: Class will begin on time and end on time. **Take notes with paper and pencil.** It is very difficult to draw sketches and graphs on most computers quickly, as will be necessary. Additionally, your handwritten notes may be used for pop quizzes and exams, but computers may not. Absence from more than 2 classes without medical or other documented legitimate excuse may result in being dropped from the class, but **if you decide not to take the course you must drop it yourself**.

COVID-19 CONSIDERATIONS: Do not come to class if you feel sick, have a fever or unexpected breathing issues. Contact the university and your professors immediately. We must all wear masks or similar face coverings at all times during class.

You have the ability to prevent the spread of COVID-19 and to preserve the health of fellow students, your instructor, staff and the community by following UNM health protocols. The UNM Provost Administrative Directive on Mandatory Student Face Covering and Symptom Reporting of July 9, 2020 requires that all students on UNM-Main and UNM branch campuses wear face masks in the face-to-face classroom and on campus unless they have a specific mask accommodation (confidentially documented with the Accessibility Resource Center). UNM Provost Administrative Directive is consistent with Governor Lujan Grisham's Public Health Emergency Order as amended, and the Public Health Order of the New Mexico Health Secretary. It also requires daily participation in symptom screening through covidscreen, which will be sent via UNM e-mail.

Acceptable masks and mask wearing in class: A two-layer mask that covers the nose and mouth and that is cleaned regularly is acceptable. A face shield is not sufficient protection. It is vital that you wear your mask correctly, covering your nose and mouth. Removing your mask for an extended period to eat or drink in class violates the Provost Administrative Directive and endangers others.

Mask Wearing Accommodation: Individuals with a documented disability or diagnosis may seek accommodation with the UNM Accessibility Resource Center (ARC) (https://arc.unm.edu/). Individuals do not need to reveal private information to an instructor. ARC will require documentation of health requirements, which will be kept confidential. The instructor will be informed only of any need for accommodation.

Consequences of not wearing a mask properly: Unless you have an ARC-approved accommodation, if you don't wear a mask, or if you do not wear a mask properly by covering your nose and mouth, you will be asked to leave class. If you fail to wear a mask properly on more than one occasion, you can expect to be dropped from the class. If you insist on remaining in the classroom while not wearing a mask (without an ARC-determined accommodation), class will be dismissed for the day to protect others and you will be dropped from the class immediately.

This class may move to remote delivery at any time to preserve the health and safety of the students, instructor and community. Please check your UNM email or the Announcements page for this class on learn.unm.edu regularly for updates about our class and please check https://bringbackthepack.unm.edu regularly for general UNM updates.

GRADING: Grading will be weighted as follows:

Midterm Exam 1:	10%
Midterm Exam 2:	15%
Final Exam (~20% comprehensive):	20%
Quizzes and in-class exercises (drop lowest):	20%
Short problems (about 4; drop lowest):	15%
Participation (discussion boards and in-person):	15%
News Item:	5%

- **No late work accepted** (this applies to short problems and in-class exercises, where the lowest score is dropped for each).
- **No extra credit is given** (i.e. no one will have a chance to earn points that everyone does not have). The way to get "extra credit" is to do your best on the regular work!

MAKE-UPS: Because your lowest quiz and problem scores are dropped, **no make-up quizzes or problems will be given** except in exceptional documented cases. If you cannot take an exam during the scheduled period, you must contact me **before the exam period has ended** to document legitimate reasons and discuss scheduling.

ACCOMMODATIONS: The University of New Mexico strives to be compliant with the ADA (Americans with Disabilities Act), which prohibits discrimination in the offering of programs and services on the basis of disability. The UNM committee on disabilities notes that disabled students should inform their instructor of special needs as soon as possible to ensure that those needs are met in a timely fashion.

QUIZZES: Quizzes will be given every week or every 2 weeks. These quizzes will sometimes be on learn and sometimes in the last 5-10 minutes of class. The quizzes will be based on notes given that day and in the previous class; open notebooks are allowed. You will do very well on the quizzes as long as you attend class and **take good notes.** The lowest quiz score is dropped.

Use of "iClickers": Clickers are remotes used in class that allow students to respond to questions anonymously. They provide rapid feedback for both the instructor and students and will be used to give quizzes and assess participation in this course. A clicker will be assigned to you on the first in-class day, you do not need to buy one yourself.

EXAMS: These are designed primarily to test your understanding of concepts, but some memorization of important facts and terminology is necessary. **The textbook reading provides essential reinforcement for lecture material and may form the basis for exam questions. Exams are taken individually on UNM Learn.** These will be available for 2 hours, and once started, must be completed within a specified period (usually 90 minutes). **Open textbooks and personal notes are allowed**, but the questions will be somewhat more difficult than the typical in-class questions, therefore familiarity with the material before taking the exam is just as essential as with a closed book, in-class exam. **No help from any other person is allowed, and you must sign a pledge to accept no help when you take the exam.**

SHORT PROBLEMS: Three to four problem sets of different types will be assigned during the term, including simple quantitative problems. You will access and complete these online, and **all are due one week after they are assigned**. **Plagiarism – which without question includes copying and pasting of all or part of any web material – will not be tolerated on any work.**

Discussion Boards: A discussion boards will be maintained throughout the semester with new forums opening regularly. You will be expected to participate in the discussions **EVERY WEEK** as part of the remote learning portion of the class. The discussion boards will be the primary component of the participation grade, although in-person participation will also play an important role in that grade.

KEEPING UP WITH THE NEWS: Because Earth science often concerns issues of environmental, social, and political importance, it will be your job to keep track of current events, and to submit one relevant geoscience news item for possible brief discussion in class. **WRITE a concise single paragraph summarizing the issue, scientific findings, and/or events in the article and your reaction to this news in light of your understanding of environmental science, to turn in with the article.** Newspaper clippings, magazine articles, and web materials will suffice, or even video or audio recordings (if truly news). So that news discussions are distributed throughout the term, turn in your item by email or in class following the schedule below. **Don't forget** – these are easy points!! This will be due in April.

Additional resources:

We are currently living through one of the most challenging times in living memory, and you may be experiencing a lot of stress and anxiety. Fortunately, as a UNM student you have access to wide range of resources designed to help students succeed in their academics and in their personal lives.

UNM-Valencia has a **Learning Center** that offers a wide range of tutoring options. Many of the larger classes at UNM-V have assigned tutors that are familiar with the class materials. GEOL 1110 is a small class and doesn't currently have an assigned tutor, but you can get help from other tutors with a science background. Check out the Learning center website here:
https://valencia.unm.edu/campus-resources/the-learning-center/learning-center.html
or make an appointment here: https://esurvey.unm.edu/opinio/s?s=131505

UNM also offers counseling and other mental health resources. Sometimes you just need to talk to someone who can help you process the events in your life and improve your mental state. Many of these resources can be accessed online. https://shac.unm.edu/services/mental-health/index.html

The UNM Office of Equal Opportunity (OEO) contains a wide range of resources that can help you succeed and keep our campus free from discriminatory acts and sexual violence. If you have witnessed or survived sexual discrimination or assault or a hate crime, the OEO website has reporting options and professionals who can answer your questions. https://oeo.unm.edu/

The OEO also coordinates with UNM's Accessibility Resource Center where students can request accommodations for disabilities. https://arc.unm.edu/

A more complete listing of UNM resources related to diversity, safety and health and COVID-19 can be found here: https://oeo.unm.edu/resources/index.html

*****PLEASE BE SURE TO REMAIN IN EMAIL CONTACT FOR UPDATES AND NOTICES THROUGHOUT THE CLASS *****

See the next page for the schedule.

Last updated 1/15/2021		**GEOL 1110 Physical Geology, Spring 2021 Ben Burnett**		
		Tentative SCHEDULE		**GEOL 1110L**
Week	**Section**	**Lecture Topics**	Reading in **Earth, Portrait of a Planet**	**Lab**
19-Jan	**Our Island in Space**	What is science? Universe to Core - Journey to the center of the Earth	Preface, Ch. 1, 2	Quantitative Geoscience
26-Jan		Plate tectonics	Ch. 3, 4	Topo maps
2-Feb	**Earth Materials**	Minerals and Igneous rocks	Ch. 5, 6 Interlude A	Plate tectonics
9-Feb		Sediments, sedimentary rocks and metamorphic rocks	Ch. 7, 8 Interludes B, C	Mineral properties
16-Feb	**Tectonic Activity on a Dynamic Planet**	Finish rocks, begin Volcanoes	Ch. 9	Mineral identification
23-Feb		Review for exam **MIDTERM EXAM 1 on Feb 25**		Igneous Rocks
2-Mar		Earthquakes Seismic layering and mountain building	Interlude D Ch. 11	Sedimentary Rocks
9-Mar		History before history	Interlude E Ch. 12, 13	Metamorphic rocks
16-Mar		Spring break		
23-Mar	**Earth Resources**	Energy and mineral resources	Ch. 14, 15	Relative and numerical dating
30-Mar	**Earth Surface Processes**	Hydrologic cycle, review for exam **MIDTERM EXAM 2 on April 1**	Interlude F	Seismology
6-Apr		Mass movements and erosion by streams	Ch. 16, 17	Geologic maps
13-Apr		Oceans and groundwater	Ch. 19, parts of 18	Groundwater
20-Apr		Atmosphere, Climate	Ch. 20, parts of 21, 22	Surficial geology
27-Apr		Climate continued, Global change and human impacts	Ch. 23	Climate Change
4-May		Global change and human impacts	Ch. 23	Practical examination
11-May		**REVIEW AND FINAL EXAM** Final exam on Tuesday May 11 10:30-12:30		