

GEOL 1110 Physical Geology syllabus

Fall 2020

Section 501, 3 credits

Tuesday 10:30 am - 11:45 am, VAHS 101

PROFESSOR: Dr. Ben 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*

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.

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.

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.

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.

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.**

QUIZZES: Unscheduled "**pop**" quizzes will be given, usually in the last 5-10 minutes of class, based on the same day's lecture, with open notebooks 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.

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.**

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 November.

GRADING: Grading will be weighted as below:

Midterm Exam 1:	15%
Midterm Exam 2:	20%
Final Exam (~20% comprehensive):	25%
Pop quizzes, in-class exercises (drop lowest):	20%
Short problems (about 4; drop lowest):	15%
News Item:	5%

- **No late work accepted** (this applies to short problems, where the lowest score is dropped).
- **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!

Use of “Clickers”:

These remotes provide rapid feedback for both the instructor and students. They will also be used to give quizzes and assess participation in this course.

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.

FINALLY: Given that there are a whole lot of “**NO's**” above, I just want to add that **YES**, it is absolutely OK to have fun in this class!

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

See the next page for the schedule.

Last updated 9/22/2020		GEOL 1110 Physical Geology, Fall 2020 Ben Burnett		
		Tentative SCHEDULE		GEOL 1110L
Week	Section	Lecture Topics	Reading in <u>Earth, Portrait of a Planet</u>	Lab
18-Aug	Our Island in Space	What is science? Universe to Core - Journey to the center of the Earth	Preface, Ch. 1, 2	Quantitative Geoscience
25-Aug		Plate tectonics	Ch. 3, 4	Topo maps
1-Sep	Earth Materials	Minerals and Igneous rocks	Ch. 5, 6 Interlude A	Plate tectonics
8-Sep		Sediments, sedimentary rocks and metamorphic rocks	Ch. 7, 8 Interludes B, C	Mineral properties
15-Sep	Tectonic	Finish rocks		Mineral identification
22-Sep	Activity on a Dynamic Planet	Seasons and tides; Review for exam MIDTERM EXAM 1 on Sept 24	Ch. 9, 10	Igneous Rocks
29-Sep		Volcanoes, Earthquakes Seismic layering and mountain building	Interlude D Ch. 11	Sedimentary Rocks
6-Oct		History before history	Interlude E Ch. 12, 13	Metamorphic rocks
13-Oct	Earth Resources	Energy and mineral resources	Ch. 14, 15	Relative and numerical dating
20-Oct	Earth Surface Processes	Hydrologic cycle, mass movements and erosion by streams	Interlude F Ch. 16, 17	Seismology
27-Oct		Oceans and Groundwater	Ch. 18, 19	Geologic maps
3-Nov		Zoom Review (no class on Tuesday - VOTE!) MIDTERM EXAM 2 on Nov. 5		No lab
10-Nov		Atmosphere, Climate	Ch. 20	Groundwater
17-Nov		Deserts and glaciers	Ch. 21, 22	Surficial geology
24-Nov		Global change and human impacts Thanksgiving on Nov 26	Ch. 23	Practical examination
1-Dec		Global change and human impacts (All remote classes)	Ch. 23	Climate change
8-Dec			REVIEW AND FINAL EXAM (all remote)	