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Spring 2-1-2022

### GEO 101N.50: Introduction to Physical Geology

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# Introduction to Physical Geology (GEO101N)

GEO101N--Online

COURSE SYLLABUS

<b>Course Rubric and Title:</b>	GEO101N Introduction to Physical Geology
<b>Semester Credits:</b>	3 credits
<b>Professor:</b>	Ashley Preston
<b>Office:</b>	MC405, Missoula College
<b>Email:</b>	<a href="mailto:ashley.preston@umontana.edu">ashley.preston@umontana.edu</a>
<b>Office Hours:</b>	TuTh 10:30 – 11:30; or by appointment; Zoom link in Moodle shell

**Course Description:** Offered autumn and spring. General geology, including the work of wind, flowing water, glacial ice, gravity, earthquakes, volcanoes, and plate tectonics in shaping the earth.  
Gen Ed Attributes: Natural Science Course (N). Offered at Missoula College online spring semester.

**Course Overview:** GEO101N is an introduction to geosciences, the study of how Earth works. The course investigates Earth's internal and surface structures, physical processes, and the dynamic relationships between Earth's geosphere, hydrosphere, and atmosphere. The course begins by introducing students to the scientific method as a tool for learning about the physical world, and in particular, to the methods of observation, data collection, experimentation, validation, interpretation, and theory building used in the geosciences. Students are expected to apply these to the study of Earth's systems.

The course also investigates the interactions between Earth's natural processes and structures and human actions. Humans around the world are impacted every day by interaction with the planet, just as planetary systems are impacted every day by interaction with humans.

**Required Text:** Tillery, Bill. 2020. *Physical Science*, 12<sup>th</sup> edition. McGraw-Hill Higher Education. ISBN: 9781260150544. Additional readings and materials in Moodle.

**Student Learning Outcomes:** Upon completion of this course, the student will be able to:

- Recognize patterns in natural processes and structures; formulate and test elementary predictions based on pattern recognition; draw conclusions and construct hypotheses and/or theories.
- Understand the methods of observation, data collection, experimentation, validation, interpretation, and theory building in the geosciences
- Describe, analyze, and assess geologic, atmospheric, and hydrological features, events, and processes
- Use evidence (e.g., from graphs, rocks, maps, etc.) to support an interpretation or explain a concept
- Understand the general principles associated with the discipline of geosciences
- Demonstrate knowledge of the methods used to identify minerals through their composition and physical properties; distinguish between igneous, sedimentary, and metamorphic rocks and their formation
- Identify and describe the materials that make up the solid Earth, including common rock-forming minerals, common rock types, their basic characteristics and geologic settings
- Understand geologic time, fossilization, and the tools geologists use to date geologic events and structures
- Know how the Earth formed and be able to describe the structure of the Earth.
- Describe the basic elements of Earth's plate tectonic system and outline the history of plate tectonic theory
- Develop an understanding of Earth's interior structure and the evidence used to infer this structure.
- Describe how earthquakes and volcanoes occur and be able to describe their basic geology

- Demonstrate knowledge of how mountain ranges, basins, folds and faults, and other geologic structures are formed
- Demonstrate knowledge of erosion and weathering processes
- Demonstrate knowledge of the hydrological cycle and differentiate between reservoirs (ground water, lakes, streams, rivers, oceans, wetlands, etc.)
- Describe how glaciers are formed; recognize different glacial erosional landforms and deposits.
- Demonstrate knowledge of the chemical and physical aspects of the world's oceans, their formation and how human actions are changing them.
- Understand the basic structure and composition of Earth's atmosphere; how moisture and energy move through it
- Be familiar with Earth's climate and climate zones; distinguish between climate and weather.
- Understand the scientific evidence behind climate change, how climate has changed in the geologic past, and what causes climate to change.

**In addition, upon completion of a Natural Science general-education course, the student will be able to**

- Understand the general principles associated with the discipline(s) studied;
- Understand the methodology and activities scientists use to gather, validate and interpret data related to natural processes;
- Detect patterns, draw conclusions, develop conjectures and hypotheses, and test them by appropriate means and experiments;
- Understand how scientific laws and theories are verified by quantitative measurement, scientific observation, and logical/critical reasoning;
- Understand the means by which analytic uncertainty is quantified and expressed in natural sciences

## Assessment Methods and Grading

This class is offered for traditional letter grade only; it is not offered under the credit/no credit option. A C- (700/1000) is required to pass this general education course.

### 1. Chapter Quizzes

Note: **Quizzes cannot be made up** without prior approval. Contact me **in advance** of the quiz date to arrange to take the quiz prior to the regularly scheduled time. You will receive a 0 for any quiz not completed on time.

### 2. Homework/Assignments

- Biographical sketch of a scientist
- Directed readings from historical texts and professional science journals with questions
- Science journal article summaries
- Other work as assigned

Note: **Late assignments are not accepted.**

### 3. Comprehensive Final Exam. The final is cumulative.

Note: **Exams cannot be made up** without prior approval. You must contact me **in advance** of the exam date to arrange to take the exam prior to the regularly scheduled time.

### 4. Attendance/participation

For **online** students, participation is measured by the frequency and quality of contributions to the Discussion Board/Forum (quantity will not replace quality; consult the grading rubric for details), and timely completion of ALL work.

### 5. Point distribution (tentative):

Chapter Quizzes (10)@50 each (drop 1 lowest score)	450
Homework/Assignments	450
<u>Comprehensive Final Exam</u>	<u>100</u>
	1000 points

**Grading Scale**

A minimum final grade of C- is required to pass.

*Please note: I do not round up—the first two numbers of your grade are your grade! Check Moodle often to keep track of your grades.*

A- = 90 – 92.99	A = 93 - 100	
B- = 80 – 82.99	B = 83 – 86.99	B+ = 87 – 89.99
C- = 70 – 72.99	C = 73 – 76.99	C+ = 77 – 79.99
D- = 60 – 62.99	D = 63 – 66.99	D+ = 67 – 69.99
F = 59 and below		

**Studying and Time Expectations**

A college course typically requires **2-3 hours of work outside of class for each hour in class**. This means that for a 3-hour class, you should plan to spend 6-9 hours per week outside of class on reading, doing assignments, and studying.

**Topical Outline**

Scientific Method and Process	Earth in Space	Rocks and Minerals	Plate Tectonics
Building Earth's Surface	Shaping Earth's Surface	Geologic Time	The Atmosphere
Weather and Climate	Earth's Waters		

**Broad Topical Schedule of Classes Spring 22--tentative**

Week	Chapter
Week 1	What is science?
Week 2	Earth in Space
Week 3	Rocks and Minerals
Week 4	Plate Tectonics
Weeks 5-6	Building Earth's Surface
Weeks 6 -7	Shaping Earth's Surface
Weeks 8-9	Geologic Time
Week 10	Spring Break
Weeks 11-12	Earth's Atmosphere
Week 13-14	Weather and Climate
Weeks 15 -16	Earth's Waters
Week 17	Final exam

The above schedule, policies, procedures, and assignments for this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better student learning.

**Course Accommodations Statement (DSS)**

*Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students \[DSS\]](#). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommasson 154, call*

243-2243 (voice/TDD), or see <http://www.umt.edu/dss/>. I will work with you and DSS to provide an appropriate modification.

Stop by during office hours to talk about your accommodations and how to use them for this course. If you plan on using an accommodation for an assignment, you must let me know in advance. I will do my best to grant the accommodation if it does not undermine the objectives of the assignment. However, you must contact me prior to the due date—even better, prior to the start of the assignment—to let me know if you will need to use an accommodation that allows for an extension on the deadline. I cannot grant a deadline extension retroactively.

### Important Dates and Deadlines (Registrar's Office)

Click on <https://www.umt.edu/registrar/calendar.php> to see the calendar for important dates and deadlines about adding, dropping, payment, withdrawals, etc.

### Student Conduct Code

In an effort to ensure that students are informed about the consequences of academic misconduct, the Academic Officers of The University of Montana have determined that the following statement must be present on every course syllabus. You will be held to these standards in this course.

*All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).*

Plagiarism will not be tolerated. The U of M's student Conduct Code defines plagiarism as "Representing another person's words, ideas, data, or materials as one's own or the student's own previous work as if it were the student's own original work." Students may be asked for their research or sources at any time. Plagiarism will be handled in strict accordance with the University of Montana Student Conduct Code.

### Email policy at UM

According to the University email policy effective on 1 July 2007, an "employee must use *only* UMM assigned student email accounts for all email exchanges with students, since such communication typically involves private student information." This means that you *must* send any correspondence through your official UM student email account. For more information on setting up and using your official UM student email account contact tech support.

**My email policy:** I typically respond to emails within 24 hours, weekends and holidays excepting. I check emails regularly during the week, M-F between 8 and 5, but not on the weekends. Start early in an assignment cycle to ensure you've got your questions and concerns addressed before the weekend.

### Diversity, Equity, and Inclusivity

Missoula College values the diversity of its students, faculty, and staff as an essential strength that contributes to our shared educational mission. Students of all backgrounds and perspectives are recognized and respected in this class. Course content and activities are intended to honor diversity of gender, sexuality, ethnicity, race, culture, religion, age, disability, socioeconomic status, and all dimensions of diverse human experiences and their intersection. Please notify your instructor if components of this course present barriers to your inclusion. Students can also reach out to Dr. Salena Beaumont Hill in the [Office of Inclusive Excellence for Student Success](#), which provides student support for BIPOC and LGBTQ+ students and student groups. To explore making a formal report about discrimination or harassment, please visit the [Equal Opportunity / Title IX office](#). For counseling or advocacy related to discrimination, please visit [SARC](#).

**Student Support Resources (including COVID-Specific Policies and Information)**

*Keep yourself updated and informed as policies evolve. Prepare to adapt*

From the Office of the Provost: [Student Support Resources](#)