

**Geology 101-004
Physical Geology
Spring 2023 Syllabus**

Meeting Times and Location

Tuesdays and Thursdays 3:00 –4:15 pm
Planetary Hall 206

All classes are scheduled to be conducted in-person. If COVID or other issues prevent in-person classes, classes will be conducted synchronously online (i.e., live online) through Blackboard Collaborate Ultra. The Collaborate Ultra system may be accessed through the Tools menu on the course Blackboard page.

Instructor

Dr. Jules Goldspiel

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Office: Exploratory Hall 3414

(Located in Exploratory Hall 3400 Office Suite, same area as Forensic Science Program offices)

Office Hours: Mondays 11:00 am – 12:00 pm

Tuesdays 1:00 – 2:00 pm

Other days and times by appointment

e-mail: jgoldspi@gmu.edu (best contact method)

Course Information

3 Credits

This is a Mason Core course. It is listed under the Natural Science category in the Exploration Courses section and fulfills Natural Science requirements. The goals of natural science core courses are to engage you in scientific exploration, foster your curiosity, enhance your enthusiasm for science, and enable you to apply scientific knowledge and reasoning to personal, professional and public decision making.

This course will focus on the structure of Earth, properties of Earth materials, processes that operate on and below the surface of Earth, and human interactions with Earth. Topics covered will include rocks and minerals, earthquakes and seismology, volcanic processes, marine processes, weathering and erosion, sediment transport and deposition, paleomagnetism, plate tectonics, and the specific properties and actions of wind, rivers, glaciers, groundwater, and mass movement.

The goals of this course are for students to:

- Appreciate the range of physical and chemical processes that are (and have been) active on Earth
- Understand how geologic processes work and leave their marks, large and small, on Earth
- Understand how the interior structure of the Earth can be determined
- Understand that Earth's continents are not fixed in place and have moved over Earth's history
- Appreciate the age of the Earth and understand how geologic ages are determined
- Appreciate that some geologic properties and processes are unique to Earth and some are shared with other planets
- Understand that scientific inquiry is based on collection of evidence, and testing and analysis of theories against the evidence
- Evaluate scientific information and learn to distinguish primary and secondary sources, and to assess the credibility and validity of the information
- Understand that scientific knowledge and theories evolve based on collection of new evidence and new understandings of old evidence, and that scientific inquiry differs from personal and cultural beliefs

- Recognize and articulate the relationship between the natural sciences and society, and how science can be applied to societal challenges
- Recognize the scope and limits of science

This course works in coordination with GEOL 103, which is a separate 1-credit Laboratory course. If you need to fulfill a Natural Science with Lab requirement, you must be enrolled in GEOL 103 in addition to GEOL 101. Please consult with your Academic Advisor if you are unsure about the Laboratory course requirement for your major.

Course Books and other Materials

Primary Lecture Textbook

Essentials of Geology, 13th Edition, 2018, F. K. Lutgens, E. J. Tarbuck and D. Tasa, Pearson.

Available in print and electronic formats. See GMU Bookstore for purchasing and renting options. (Ancillary materials are also available from the publisher; these extra materials are not required.)

Book is also on reserve at Fenwick Library (see <https://publishing.gmu.edu/textbooks-on-reserve/>).

Alternate Lecture Textbook

An Introduction to Geology, 2017, C. Johnson, M. D. Affolter, P. Inkenbrandt, and C. Mosher.

Available online at no cost (<https://opengeology.org/textbook/>).

Scantron forms

The primary format for all exams will be online exams taken through the Blackboard system using the Respondus LockDown Browser and Monitor. Students who cannot take online exams, or do not wish to do so, will have the option of taking the exams in-person using printed exams and Scantron forms. To take paper exams you must inform the instructor in advance and supply your own Scantron 882-E forms (i.e., the Scantron forms that have 50 question spaces on each side and five response choices A-E). These forms are available at the GMU Bookstore and from many other sources.

Required Coursework & Grading Weights

Weight	Coursework
25%	Exam I
25%	Exam II
25%	Exam III (Final Exam)
20%	Online Quizzes
5%	In-Class Questions and Exercises

The required coursework consists of three exams, weekly online quizzes, and in-class questions and short exercises. The weights of the graded items are as listed in the table at left. For the online quizzes and in-class questions and exercises, the indicated weighting is for the combined total of these course elements.

Exams will not be cumulative; they will reflect the material covered in the preceding section of the class. Quizzes will be released online on most, but not all, weeks that class meets and will be time-limited. Quizzes will consist of no more than ten questions, and will be scored for accuracy. In-class questions and exercises will be presented in class during most class meetings. In-class questions and exercises will be scored on the basis of participation only.

Grade Scale

Grade	Coursework %
A	≥ 90%
B	80 – 89%
C	65 – 79%
D	50 – 64%
F	< 50%

Letter grades will be determined by the weighted percentage of total points possible. The standard grade scale ranges are as indicated. The grade scale is subject to change, but if any change is made, it will be favorable to students (i.e., if the scale is changed, the cutoffs for each grade would be at lower percentages than indicated, not higher).

+/- qualifiers will be used for grades near the letter grade limits

Tentative Course Schedule

Week	Date	Topic	Textbook Chapter	Alt. Text Chapter
1	01/24	Course Information & Overview of Physical Geology	1	1
	01/26	Matter and Minerals	3	3
2	01/31	Igneous Rocks, Magma and Intrusive Igneous Structures	4	4
	02/02	Volcanoes and Volcanic Hazards	5	4
3	02/07	Weathering and Soils	6	5
	02/09	Sedimentary Rocks	7	5
4	02/14	Metamorphic Rocks	8	6
	02/16	Review 1		
5	02/21	<i>Exam I</i>		
	02/23	Mass Movement (Mass Wasting)	12	10
6	02/28	Surface Water	13	11
	03/02	Groundwater	14	11
7	03/07	Glaciers and Glaciation	15	14
	03/09	Ice Ages		
8	03/14	<i>Spring Break (No Class)</i>		
	03/16	<i>Spring Break (No Class)</i>		
9	03/21	Deserts & Wind	16	13
	03/23	Shores and Shorelines	17	12
10	03/28	Review 2		
	03/30	<i>Exam II</i>		
11	04/04	Plate Tectonics	2	2
	04/06	Earthquakes and Earth Interior	9	9
12	04/11	Origin and Evolution of Ocean Floors	10	
	04/13	Crustal Deformation	11	9
13	04/18	Mountain Building and Geologic Time	18	7
	04/20	Evolution of Earth	19	8
14	04/25	Earth Resources		16
	04/27	Climate Change	20	15
15	05/02	Planetary Geology		
	05/04	Review 3		
16	05/11	<i>Exam III (Final Exam) (1:30 – 2:45 pm)</i>		

* Online quiz

If GMU is closed on the scheduled date of the Final Exam, the make-up date and time of the Final Exam will be announced. Check Blackboard and GMU e-mail.

Note: Course content and schedule may be modified by the instructor as the semester progresses.

Key Add/Drop/Withdrawal Dates

- Jan 30 Last day to add classes
- Feb 06 1st drop deadline (full tuition refund, no record on transcript)
- Feb 13 2nd drop deadline (50% tuition refund, no record on transcript)
- Feb 27 Last day for unrestricted Self-Withdrawal (no tuition refund, W on transcript)
- Apr 03 Last day for Selective Withdrawal (no tuition refund, W on transcript)

Course Policies

Electronic Devices: The use of electronic devices (computer, tablet, phone and the like) is permitted during class. While in class, your phone ringer and any other audible alerts on your devices must be off. Be respectful of your peers and instructor and do not use your electronic devices to engage in activities that are unrelated to the class while class is in session. The instructor reserves the right to prohibit the use of electronic devices by any student whose use of a device is unrelated and/or disruptive to the class.

Except for the device used to take the online exams themselves, no other use of electronic devices is allowed during exams. You may not use any device to access notes or any other information during exams.

Earbuds and headphones may not be worn at any time during class or during exams without an approved accommodation or prior approval from the instructor.

All standard University policies apply to the use of University computers and University computer systems for this course. Please see the GMU policies website for a summary of the University computer policies (<https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).

Course Materials and Presentations: All course materials and presentations (e.g., lecture outlines, lecture charts, exams, demonstrations) are for course use only. ***These materials may not be shared, posted or in any way redistributed outside of the course, either electronically or as hardcopy.*** Sharing or redistribution of these materials is a violation of the GMU Honor Code.

Recording of Lectures: Lectures and demonstrations may *not* be electronically recorded in any format without prior permission of the instructor and completion of the appropriate University Recording/Lecture Notes Agreement form. The opinions, questions or comments of other class members must not be played back to anyone outside of the class.

Attendance: Students are expected to attend class regularly. While attendance is not strictly required, note that attendance does factor directly into grades through the in-class questions and exercises.

Exams: Exams I and II will be taken during the class meeting time on the days listed in the course schedule. Exam III (the Final Exam) will be taken during Final Exam week at the day and time listed on the course schedule. All exams must be completed within 75 minutes of the scheduled start time. Online exams will require use of the Respondus LockDown Browser and Monitor. To take an exam on paper in the lecture room, you must let the instructor know no later than 1 week before the scheduled exam time.

All exams are closed book and closed notes. Use of these materials, or any other source of information, is prohibited during all exams.

Quizzes: Quizzes will be assigned approximately weekly, and will be made available online through Blackboard as each quiz is assigned. Quizzes are to be taken online through Blackboard and are to be completed outside of class. All quizzes must be completed within 45 minutes of when the quiz is started. To earn credit for a quiz you must complete that quiz within six days after it is made available.

Quizzes are open book and open notes; you may use notes, books or any other information for the quizzes.

In-Class Questions and Exercises: To earn credit for each in-class question or exercise, you must attend class and complete each question or exercise in class at the time it is presented.

Missed Coursework: Reasonable accommodations will be made for missed exams and quizzes due to sickness, religious observance and other unavoidable schedule conflicts if the instructor is notified prior to the date the exam or quiz is given. Unusual situations that prevent advance notice to the instructor will be handled on a case-by-case basis. In any event, exams and quizzes that are not made up or remain unexcused one week after the scheduled exam or quiz date are subject to a grade of zero.

There will be no accommodation to make up in-class questions and exercises. However, up to three classes can be missed without losing the ability to earn full credit for in-class questions and exercises.

Collaboration: Students are encouraged to study together and discuss with each other the information and concepts covered in the lectures and course readings. Collaboration is permitted for quizzes and in-class questions and exercises so long as all students in the collaboration fully participate and submit their own responses. Simple division of labor (i.e., dividing questions within the group) is not consistent with this collaboration policy. Any discussions and collaborations must be done in accord with all current University and local authority COVID-19 protocols, policies and regulations.

Collaboration of any sort is not permitted during exams.

Grade Postings on Blackboard: All course scores will be posted on Blackboard unless otherwise requested. Please tell the instructor if you do not want your scores posted on Blackboard.

Unscheduled University Closure: In the event of an unscheduled University closure or access limitation due to weather or other reasons, check Blackboard and your GMU e-mail for any class announcements. If class cannot meet because of the closure or access limitations, supplementary activities may be assigned.

University Policies

General University Policies: The University Catalog is the central resource for GMU policies affecting student, faculty and staff conduct in university academic affairs. Please see the catalog (<https://catalog.gmu.edu>) or the University Policy web site (<https://universitypolicy.gmu.edu>) for information on academic and non-academic policies not explicitly specified in the syllabus.

Academic Integrity: GMU is an Honor Code university. The Honor Code explicitly defines cheating, plagiarism, stealing and lying in the academic context. See the Office for Academic Integrity (<https://oai.gmu.edu>) for a full description of the code and the honor committee process.

The principle of academic integrity is taken seriously and violations are treated gravely. Three fundamental principles to follow at all times are: (1) collaboration on coursework may or may not be permitted (see policies for specific courses), but either way all work submitted must be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules for collaboration on a particular assignment, ask for clarification. Another aspect of academic integrity is the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives and traditions.

Electronic Communications: The instructor will only use the GMU e-mail or Blackboard systems for electronic communications with students. All student electronic communications to the instructor should be sent through your GMU e-mail account or Blackboard. Please do not use personal e-mail accounts. For more information about student e-mail accounts, see the GMU mail website (<http://mail.gmu.edu>).

Disability Accommodations: All academic accommodations must be arranged through Disability Services. If you need academic accommodations, please contact Disability Services at 703-993-2474. See also the Disability Services website (<https://ds.gmu.edu>) for more information.

Diversity: Through its curriculum, programs, policies, procedures, services and resources, GMU strives to maintain a quality environment for work, study and personal growth. An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals.

Diversity is broadly defined to include such characteristics as, but not limited to, race, color, ethnicity, national origin, religion, age, disability, gender identity and expression, pregnancy status, sex and sexual orientation. Diversity also entails different viewpoints, philosophies and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

Students, instructors and staff are all expected to uphold GMU's commitment to equitable access and meaningful inclusiveness for all within the GMU community.

Sexual Misconduct and Interpersonal Violence: GMU is committed to providing a safe learning, living and working environment. Your experience at Mason is meant to be vibrant and dynamic, and one that includes ample opportunities for exploration of self, identity and independence. Sexual misconduct and incidents of interpersonal violence deeply interrupt that experience, and GMU is committed to maintaining a campus that is free of such incidents.

GMU encourages individuals who have been sexually harassed, assaulted or subjected to sexual misconduct to seek assistance and support. Confidential resources that are available on campus include: University Title IX Coordinator, Counseling and Psychological Services (CAPS), Student Support and Advocacy Center (SSAC), and Student Health Services (SHS). Please note that most all other members of the University community are not considered confidential resources and are required to report incidents of sexual misconduct or other prohibited conduct to the University Title IX Coordinator.

Title IX

Title IX is a federal civil rights law that was passed as part of the Education Amendments of 1972. It prohibits discrimination on the basis of sex under any education program or activity receiving federal funding. GMU receives federal funds in many forms and so is required to comply with Title IX.

Sexual assault and sexual harassment are forms of sex discrimination prohibited by Title IX. Other issues that are investigated under Title IX include stalking, intimate partner violence, gender-based harassment, sexual exploitation, complicity in the commission of any act prohibited by this policy, and retaliation for good faith reporting of any of these forms of conduct or participation in any investigation or proceeding.

For more information see <https://diversity.gmu.edu/title-ix/what-title-ix/university-title-ix-statement> and https://www2.ed.gov/about/offices/list/ocr/docs/tix_dis.html .

Student Support Resources

GMU has several support resources available to all students. Potentially useful starting points include:

- Learning Services: <https://learningservices.gmu.edu>
- Tutoring Resources: <https://learningservices.gmu.edu/tutoring-resources>
- Student Health Services: <https://shs.gmu.edu>
- Counseling and Psychological Services: <https://caps.gmu.edu>
- Student Support and Advocacy Center: <https://ssac.gmu.edu>
- Diversity, Equity and Inclusion: <https://diversity.gmu.edu>
- Sexual Misconduct, Harassment and Discrimination resources:
<https://diversity.gmu.edu/equity-access-services/title-ix>
- University Title IX Coordinator: <https://diversity.gmu.edu/title-ix/who-can-i-call>
- University Career Services: <https://careers.gmu.edu>

Many other resources are listed under Student Life: <https://www.gmu.edu/student-life>

Coronavirus/COVID-19 Information and Resources

While the risk of major disruption to classes and other University activities has been reduced, COVID-19 and other community health issues remain a potential threat to the normal operations of classes and other activities at GMU. Please pay attention to announcements regarding changes that may be made to this class and other classes as conditions warrant. Should changes occur, you will be required to follow the enacted University health policies, procedures and associated requirements.

Information and resources related to COVID-19 and potential impacts on GMU procedures operations can be found at GMU's Safe Return to Campus site (<https://www.gmu.edu/safe-return-campus>).

Facemasks: Students are required to follow the GMU facemask policy that is in force on each class meeting day (see <https://www.gmu.edu/safe-return-campus/personal-and-public-health/face-coverings>).