

**Geology 101-005
Physical Geology
Fall 2024 Syllabus**

Meeting Times and Location

Wednesdays 4:30 – 7:10 pm
Innovation Hall 103 (in-person)

Instructor

Dr. Jules Goldspiel
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Office: Exploratory Hall 3414
Office Hours: Wednesdays 2:30 – 4:00 pm
 Thursdays 3:30 – 4:30 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 Requirements section. 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 Textbooks

Primary Lecture Textbook (Recommended)

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 (Recommended Alternate)

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

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

Required Coursework & Grading Weights

Weight	Coursework
25%	Quizzes (all combined)
25%	Exam I
25%	Exam II
25%	Exam III (Final Exam)

The required coursework consists of weekly online quizzes and three exams. The weights of the graded items are as listed in the table at left.

Quizzes will be released online on most weeks that class meets (see Tentative Course Schedule). Each quiz will cover the most recent topics discussed since the last quiz, and will consist of

no more than ten questions. The quizzes will be time-limited and scored for accuracy.

Exams will not be cumulative; they will only cover the material discussed in the preceding third of the class (see Tentative Course Schedule). The exams will be time-limited and will be scored for accuracy.

In addition to the required coursework, extra credit points may be earned by answering questions and participating in exercises during class. Participation in these exercises is not required. There is no other opportunity for extra credit.

Grade Scale

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Weighted Score (%)	≥ 99%	92.0 – 98.9%	90.0 – 91.9%	88.0 – 89.9%	82.0 – 87.9%	80.0 – 81.9%	78.0 – 79.9%	67.0 – 77.9%	65.0 – 66.9%	50.0 – 64.9%	< 50%

Course grades will be determined by the weighted percentage of total points possible (see Required Coursework & Grading Weights). The base (i.e., standard) grade scale is as indicated in the table above. The grade scale is subject to change, but if any changes are made, it will be favorable to students (i.e., if the scale is changed, the cutoff for a grade would be at lower percentage not higher).

Tentative Course Schedule

Semester			Textbook	Alt. Text
Week	Date	Topic	Chapter	Chapter
1 *	08/28	Course Information & Overview of Physical Geology	1	1
		Matter and Minerals	3	3
2 *	09/04	Igneous Rocks, Magma and Intrusive Igneous Structures	4	4
		Volcanoes and Volcanic Hazards	5	4
3 *	09/11	Weathering and Soils	6	5
		Sedimentary Rocks	7	5
4 *	09/18	Metamorphic Rocks	8	6
		Review 1		
5	09/25	<i>Exam I (4:30 – 5:45 pm)</i>		
6 *	10/02	Mass Movement (Mass Wasting)	12	10
		Surface Water	13	11
7 *	10/09	Groundwater	14	11
		Glaciers and Ice Ages	15	14
8 *	10/16	Wind & Dry Lands	16	13
		Shores and Shorelines	17	12
		Review 2		
9	10/23	<i>Exam II (4:30 – 5:45 pm)</i>		
10 *	10/30	Plate Tectonics	2	2
		Earthquakes and Earth Interior	9	9
11 *	11/06	Origin and Evolution of Ocean Floors	10	
		Crustal Deformation	11	9
12 *	11/13	Mountain Building & Geologic Time	18	7
		Evolution of Earth	19	8
13 *	11/20	Earth Resources		16
		Climate Change	20	15
14	11/27	<i>Thanksgiving Recess (No Class)</i>		
15	12/04	Planetary Geology		
		Review 3		
16	12/11	<i>Exam III (Final Exam) (4:30 – 5:45 pm)</i>		

* Online quiz released

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

Key Add/Drop/Withdrawal Dates

Sep 03 Last day to add classes

Sep 09 1st drop deadline (full tuition refund, no record on transcript)

Sep 17 2nd drop deadline (50% tuition refund, no record on transcript)

Oct 01 Last day for unrestricted Self-Withdrawal (no tuition refund, W on transcript)

Oct 28 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 George Mason University computers and 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 slides, 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 a recording agreement form. Acceptable agreement forms are the "Recording (Audio/Video) and Copies of Class Presentations Acknowledgement" form from Disability Services, or a similar form provided by the instructor. In all cases, the opinions, questions and comments of other class members may not be shared at any point with anyone else.

Attendance: While attendance is not strictly required, students are expected to attend class regularly.

Quizzes: Quizzes will be taken online through Blackboard. Quizzes will be made available on Blackboard approximately weekly and are to be completed outside of class. Unless otherwise noted, you will have 6 days to complete each quiz once it is made available online.

Quizzes are time-limited. You may start the quizzes at any time during the window that each quiz is available. Once started, all quizzes must be completed within 60 minutes of when the quiz is started.

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

Exams: Exams I and II will be taken during the regular class time as listed in the course schedule, and they will start at the class start time. Exam III (Final Exam) will be taken during Final Exam week and start at the time and date listed on the course schedule. If GMU is closed on the scheduled date of an Exam, the make-up date and time for the Exam will be announced through the class Blackboard site and GMU e-mail.

Exam I must be taken in class using a paper exam. For Exams II and III you will have the option of taking exams remotely online. If you want to take Exam II or III in class on paper, you must notify the instructor prior to the exam date so that a paper exam will be available for you.

In-class paper exams will require an appropriate Scantron form. A Scantron form will be provided for each exam taken in class on paper.

Online exams will require use of the Respondus LockDown Browser and Monitor.

Exams are time-limited. Unlike quizzes, exams have a set start time. Exam start times are listed in the course schedule. All exams must be completed within 75 minutes of the scheduled exam start time.

All exams are closed book and closed notes. Use of books, notes, websites, or any other information from any other source besides the exam itself, is prohibited during all exams.

Extra Credit Opportunities: In-class questions and/or exercises will be presented during most (not all) class meetings. Students can earn extra credit points by answering the questions and participating in the exercises. These questions and exercises will be scored for participation only, not accuracy. You must be in class and complete each question or exercise at the time it is presented to earn the associated points.

Any extra credit points earned will be added to your corresponding exam score for that part of the course up to the total points for that exam. For example, if you score 97.5 on an exam that is worth 100 points and earned 4 extra credit points for that portion of the course, your adjusted exam score would be 100.

The maximum number of extra credit points that may be earned during any portion of the course is 5.

All extra credit point totals will be reset to zero after each exam.

Participation in these activities is not required. Not participating will not result in loss of points. You may still earn full credit for the course through the quizzes and exams.

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. Without prior notification, late exams and quizzes are subject to a 10% reduction. 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.

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 question or exercise responsibilities within the group) is not consistent with this policy and is not permitted.

Collaboration of any sort is not permitted during exams.

Conduct During Class: Students are responsible for their actions during class and exam times. Disruptive behavior will not be tolerated. Students are also bound by all university policies and must abide by the GMU Honor Code (<https://oai.gmu.edu/full-honor-code-document/>).

Grade Postings on Blackboard: All course scores will be posted on Blackboard unless otherwise requested.

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.

Extended Emergency Adaptation: All classes are scheduled to be conducted in person. If an extended emergency situation prevents in-person classes, classes may be shifted to a synchronous online mode (i.e., live online) and conducted through Blackboard. You will be told if classes are being shifted to online mode and given instructions on how to access the online system.

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.

Common policies that affect all courses at GMU regarding Academic Standards, Accommodations for Students with Disabilities, FERPA and Use of GMU E-mail Addresses for Course Communication, and Title IX Resources and Required Reporting are listed below. These policies are also posted at <https://sternscenter.gmu.edu/home/gmu-common-course-policies/>.

Academic Standards: Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- **Honesty:** Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- **Acknowledgement:** Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, co-authored pieces, and project reports.
- **Uniqueness of Work:** Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards — including but not limited to plagiarism, fabrication, and cheating — are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures (see <https://academicstandards.gmu.edu/>). Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility: Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities: Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at GMU. If you are seeking accommodations, please visit <https://ds.gmu.edu/> for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility: Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor *in advance* of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication: The Family Educational Rights and Privacy Act (FERPA) (see <https://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html>) governs the disclosure of education records for eligible students (see <https://registrar.gmu.edu/ferpa/>) and is an essential aspect of any course. Students must use their GMU email account to receive important

University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility: Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting: As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence (<https://universitypolicy.gmu.edu/policies/sexual-harassment-policy/>). Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity: If you prefer to speak to someone *confidentially*, please contact one of Mason's confidential employees in Student Support and Advocacy (SSAC), Counseling and Psychological Services (CAPS), Student Health Services (SHS), and/or the Office of the University Ombudsperson.

Diversity and Inclusion: 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.

Title IX

Title IX is a federal civil rights law that 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 covered 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:

- Mason email: <https://mail.gmu.edu>
- Office for Academic Integrity: <https://oai.gmu.edu>
- Learning Services: <https://learningservices.gmu.edu>
- Student Health Services: <https://shs.gmu.edu>
- Counseling and Psychological Services: <https://caps.gmu.edu>
- Student Support and Advocacy Center: <https://ssac.gmu.edu>
- University Career Services: <https://careers.gmu.edu>
- Office of the University Ombudsperson: <https://ombuds.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>
- Title IX Contacts at Mason:
<https://diversity.gmu.edu/equity-access-services/title-ix/who-can-i-speak>

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