

**Geology 545-002
Planetary Geology
Fall 2023 Syllabus**

Meeting Times and Location

Mondays 4:30 –7:10 pm
Exploratory Hall 1005

Instructor

Dr. Jules Goldspiel
Department of Atmospheric, Oceanic and Earth Sciences

Office: Exploratory Hall 3414
(Located in Exploratory Hall 3400 Office Suite with the Forensic Science Program offices)

Office Hours: Fridays 4:30–5:30 pm
Other days and times by appointment

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

Course Information

3 Credits

Prerequisites: GEOL 101 (Physical Geology) or GEOL 102 (Historical Geology)

This course will focus on the geology and geologic processes relevant to the terrestrial planets, moons, and other Solar System bodies including dwarf planets, asteroids and comets. The emphasis will be on understanding past and present surface geologic processes. The geology of Earth will not be covered directly, but geologic features and processes on Earth will be compared and contrasted with those on other planetary bodies when relevant.

Participation in one Observation Night at the GMU Observatory is required outside of class hours.

The goals of this course are for students to:

- Attain a mastery of what is known and unknown about the surfaces and interiors of planets, moons and other Solar System bodies
- Become an expert on the range of geologic processes occurring throughout the Solar System today
- Develop an expertise in the evidence for different geologic processes that may have occurred on different Solar System bodies in the past
- Acquire a command of the tools and techniques used to study the geology and geologic history of planets, moons and other Solar System bodies

Students will find it helpful to have ready access to a scientific calculator or spreadsheet program.

Recommended Course Textbook

Introduction to Planetary Geomorphology, 2013, Ronald Greeley, Cambridge University Press.

Grade Scale

Grade	Coursework %
A	≥ 90%
B	80 – 89%
C	70 – 79%
D	60 – 69%
F	< 60%

Letter grades will be determined by the weighted percentage of total points possible, with coursework elements weighted as indicated in the table below. The standard grade scale ranges are as indicated in the table at left. The standard 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

Required Coursework & Grading Weights

The graded coursework for this class and the weight of each component is as listed in the table below.

Weight	GEOL 545 Coursework
5%	Quizzes
15%	Homeworks
5%	Observation Night participation
10%	Semester Exercise
10%	Independent Project
15%	Preliminary Exam I
15%	Preliminary Exam II
25%	Final Exam

Quizzes will cover facts and concepts from lectures. They will be released online through Blackboard and will check the mastery of the specific information and concept details discussed since the last quiz. Each quiz will consist of no more than 10 questions in multiple choice and/or short answer format.

Homeworks will cover quantitative aspects of the course. They will generally involve expert application of calculations, graphing and/or data analyses related to topics discussed in class.

The Semester Exercise will involve collecting, summarizing and mastering planetary surface data using publicly available data and software tools.

The Independent Project will be a short, but detailed, data collection and analysis project of a specific type and for a specific planetary body chosen by the student in consultation with the instructor.

Tentative Course Schedule

Week	Date	Topic	Textbook Chapters	Quiz Assigned	Homework Assigned
1	08/21	The Solar System & Planetary Exploration	1, 2	#1	
2	08/28	Planetary Geologic Processes	3		#1
3	09/04	<i>Labor Day – No Class</i>			
4	09/11	The Moon & Surface Ages	4	#2	
5	09/18	Mercury & Planetary Body Cooling	5		#2
6	09/25	Venus & Relevance of Atmospheres	6	#3	
7	10/02	<i>Preliminary Exam I</i>			
8	10/10	Mars System & Gradation [TUESDAY CLASS]	7		
9	10/16	Mars System & Basic Planetary Properties			#3
10	10/23	Jupiter System & Tides	8	#4	
11	10/30	Saturn System & Ring Dynamics	9		#4
12	11/06	⊕ Uranus System & Neptune System	10	#5	
13	11/13	<i>Preliminary Exam II</i>			
14	11/20	Dwarf Planets & Small Solar System Bodies			#5
15	11/27	∅ Meteorites, Exoplanets & Course Review	11		
16	12/11	<i>Final Exam (4:30 pm – 7:15 pm)</i>			

⊕ Semester Exercise due

∅ Independent Project due

[TBD*] Observation Night (Alternate date [TBD] if weather is bad on primary date)

* Observation Nights are all weather permitting. Status will be announced on the scheduled day.

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

Other Important Dates

- Aug 28 Last day to add classes
Sep 05 1st drop deadline (full tuition refund, no record on transcript)
Sep 12 2nd drop deadline (50% tuition refund, no record on transcript)
Sep 26 Last day for unrestricted Self-Withdrawal (no tuition refund, W on transcript)
Oct 23 Last day for Selective Withdrawal (no tuition refund, W on transcript)

Note: Self-Withdrawal and Selective Withdrawal options are available to undergraduate students only

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 disruptive to the class.

You may have to use university computers as part of the required work in this course. All standard university policies apply to the use of university computers and university computer systems for this course. Please see the GMU polices website for a summary of the university computer policies (<https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).

Calculators are the only aid that may be used during exams. If you plan to use a calculator function on a phone, tablet or other electronic device during an exam, you must only use the calculator function. No other use of electronic devices is allowed during exams, i.e., you may not use electronic devices to access notes or any other information during exams.

Course Materials and Presentations: All course materials and presentations (e.g., instructor notes, lectures, lecture outlines, lecture slides, assignments, exams, demonstrations) are for course use only. *They 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 without prior permission of the instructor and completion of the appropriate recording agreement form (i.e., the Disability Services Recording (Audio/Video) and Copies of Class Presentations Acknowledgement form, or a similar form provided by the instructor). In all cases, the opinions, questions and/or comments of other class members may not be played back at any point to anyone outside of the class.

Attendance: Students are expected to attend class regularly. However, attendance is not strictly required except for one Observation Night. The Observation Night will be held outside of regular class time. You must fully participate in one Observation Night to receive full credit for this assignment.

Homeworks and Quizzes: Homework assignments and quizzes will be posted on Blackboard on the days listed in the course schedule. Except when specifically noted otherwise, quizzes are due at the end of the week in which they are released (i.e., on the Saturday of the week they are made available), and homework assignments are due by the start of class (4:30 pm) one week after they are issued. Quizzes must be completed within Blackboard. Homework assignments may be e-mailed or handed directly to the instructor, or sent through Blackboard if that option is enabled. *Do not leave assignments in the instructor's office mailbox.*

Semester Exercise: The Semester Exercise assignment is due on the date listed in the course schedule. Semester Exercises may be turned in at any time before the due date.

Independent Project: The Independent Project assignment is due on the date listed in the course schedule. Independent Projects may be turned in at any time before the due date. Frequent check-ins with the instructor are permissible and highly recommended prior to submitting the final work.

Exams: Two Preliminary Exams will be taken during the regular class meeting time on the days listed in the course schedule. The Final Exam will be taken during Final Exam week on the day and time listed on the course schedule. 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 via Blackboard and e-mail.

All exams are closed book and closed notes.

Late and Missed Coursework: Reasonable accommodations will be made for late and missed coursework due to sickness, religious observance and other unavoidable schedule conflicts if the instructor is notified prior to the date the assignment/quiz is due or exam given. Unusual situations that prevent advance notice to the instructor will be handled on a case-by-case basis. In any event, assignments, quizzes and exams that are not turned in, are not made up, or remain unexcused one week after the scheduled completion 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 on homework assignments, quizzes and the Semester Exercise is permitted so long as all students in the collaboration fully participate in the discussion of all questions, do a fair share of the collaborative work, and do their own write-ups. Simple division of labor (i.e., dividing questions within the group) is not consistent with this collaboration policy and is not permitted.

Students may discuss with each other their work on their Independent Project, but each student must do their own work on their Independent Project.

Collaboration of any sort is not permitted during exams.

Grade Postings on Blackboard: All course scores will be posted on the course Blackboard site 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.

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 Class Collaborate Ultra. You will be told if classes are being shifted to online mode and given instructions on how to access the online system.

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 establishes the principles of academic integrity at GMU and 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 element 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 for classes at GMU must be arranged through Disability Services. 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 may also be contacted directly at ods@gmu.edu and 703-993-2474. Disability Services offices are located in Student Union Building I (SUB I), Suite 2500.

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 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>
- 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>
- Title IX Contacts:
<https://diversity.gmu.edu/equity-access-services/title-ix/who-can-i-speak>
- University Career Services: <https://careers.gmu.edu>

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