

**Geology 325  
Planetary Geology  
Fall 2021 Syllabus**

**Meeting Times and Location**

Wednesdays 7:20 –10:00 pm  
Exploratory Hall 1309

**Instructor**

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

Office: Exploratory Hall 3414  
Mailbox in EXPL 3400

Office Hours: Tuesdays 3:30–4:30 pm  
Other days and times by appointment

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

**Course Information**

3 Credits

Prerequisites: GEOL 101 (Introductory Geology I) or GEOL 102 (Introductory Geology II)

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:

- Develop an understanding of what is known and unknown about the surfaces and interiors of planets, moons and other Solar System bodies
- Understand the range of geologic processes occurring throughout the Solar System today
- Understand the evidence for different geologic processes that may have occurred on different Solar System bodies in the past
- Understand 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**

|   |       |  |
|---|-------|--|
| A | ≥ 90% | Letter grades will be determined by the percentage of total points possible, with point values weighted as indicated in the table below. The grade scale is subject to change if the class mean is higher or lower than expected, but any such change would be more favorable to students, i.e., the cutoffs for each letter grade could be at lower percentages than indicated by this scale but they will not be higher. |
| B | ≥ 80% |  |
| C | ≥ 70% |  |
| D | ≥ 60% |  |
| F | < 60% |  |

Letter grade +/- 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 below.

| Weight | GEOL 325 Coursework             |
|--------|---------------------------------|
| 20%    | Homework (5 assignments total)  |
| 15%    | Semester Exercise               |
| 10%    | Observation Night participation |
| 15%    | Preliminary Exam I              |
| 15%    | Preliminary Exam II             |
| 25%    | Final Exam                      |

Homeworks will generally involve calculations, graphing and/or data analyses related to topics discussed in class.

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

## Tentative Course Schedule

| Week | Date  | Topic                                     | Textbook Chapters | Homework Assigned |
|------|-------|---|-------------------|-------------------|
| 1    | 08/25 | The Solar System & Planetary Exploration  | 1, 2              |                   |
| 2    | 09/01 | Planetary Geologic Processes              | 3                 | #1                |
| 3    | 09/08 | The Moon & Surface Ages                   | 4                 |                   |
| 4    | 09/15 | Mercury & Planetary Body Cooling          | 5                 | #2                |
| 5    | 09/22 | Venus & Relevance of Atmospheres          | 6                 |                   |
| 6    | 09/29 | <i>Preliminary Exam I</i>                 |                   |                   |
| 7    | 10/06 | Mars System & Gradation                   | 7                 |                   |
| 8    | 10/13 | Mars System & Basic Planetary Properties  |                   | #3                |
| 9    | 10/20 | Jupiter System & Tides                    | 8                 |                   |
| 10   | 10/27 | Saturn System & Ring Dynamics             | 9                 | #4                |
| 11   | 11/03 | Uranus System & Neptune System            | 10                |                   |
| 12   | 11/10 | <i>Preliminary Exam II</i>                |                   |                   |
| 13   | 11/17 | Dwarf Planets & Small Solar System Bodies |                   | #5                |
| 14   | 11/24 | <i>Thanksgiving Break – No Class</i>      |                   |                   |
| 15   | 12/01 | Meteorites, Exoplanets & Course Review    | 11                |                   |
| 16   | 12/08 | <i>Final Exam (7:30 pm – 10:15 pm)</i>    |                   |                   |

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 e-mail.

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

## Other Important Dates

- Aug 30 Last day to add classes
- Sep 07 1<sup>st</sup> drop deadline (full tuition refund, no record on transcript)
- Sep 14 2<sup>nd</sup> drop deadline (50% tuition refund, no record on transcript)
- Sep 27 Last day for unrestricted Self-Withdrawal (no tuition refund, W on transcript)
- Oct 27 Last day for Selective Withdrawal (no tuition refund, W on transcript)
- [TBD\*] Observation Night 1 (Alternate date [TBD] if weather is bad on primary date)
- [TBD\*] Observation Night 2 (Alternate date [TBD] if weather is bad on primary date)
- Nov 03 Semester Exercise due

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

## Course Policies

Electronic Devices: The use of electronic devices (computer, tablet, phone, e-reader 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 policies website (<https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>) for a summary of the University computer policies.

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 charts, 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.*

Recording of Lectures: Lectures and demonstrations may *not* be electronically recorded 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. 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.

Assignments: Homework assignments will be posted on Blackboard on the days listed in the course schedule. Except when specifically noted, homework assignments are due by the start of class (7:20 pm) one week after they are issued. Assignments may be e-mailed or handed directly to the instructor. *Do not leave assignments in the instructor's office mailbox.*

Exams: The two Preliminary Exams will be taken during the regular class meeting time on the days listed in the course schedule. The time and date for the Final Exam is listed on the course schedule. All exams are closed book and closed notes.

Late Assignments and Missed Exams: Reasonable accommodations will be made for late assignments and missed exams due to sickness, religious observance and other unavoidable schedule conflicts if the instructor is notified prior to the date the assignment 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 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. Any discussions and collaborations must be done in accord with all University and local authority COVID-19 protocols, policies and regulations. For more information on health and safety protocols, see GMU's Safe Return to Campus website (<https://www2.gmu.edu/safe-return-campus>). Collaboration on homework assignments 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.

Collaboration of any sort is not permitted during exams.

Grade Postings on Blackboard: Your assignment and exam 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; please 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. To make such communications easier, it is requested that all student electronic communications to the instructor be sent through your GMU e-mail account or through Blackboard. Please do not use personal e-mail accounts. For more information about student e-mail accounts, please 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 or talk to the instructor. 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, ethnicity, gender, religion, age, disability 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.

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](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 for more information 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>
- Compliance, Diversity and Ethics: <https://diversity.gmu.edu>
- Sexual Misconduct, Harassment and Discrimination resources: <https://diversity.gmu.edu/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 listed under Student Life: <https://www2.gmu.edu/student-life>

### **Coronavirus/COVID-19 Information and Resources**

COVID-19 remains a potential threat to the normal operations of classes and other activities at GMU this semester. Please pay attention to announcements regarding changes that may have to be made to this and other classes as conditions warrant.

GMU maintains a website with information and resources related to the coronavirus and the associated procedures and changes in GMU operations that are in response to the virus. The site is updated regularly with new data and information. It also contains links to external sites (i.e., outside of GMU) where additional information can be found (<https://www2.gmu.edu/safe-return-campus>).

Mason COVID Health Check Requirements: All students taking courses with a face-to-face component are required to follow the University's public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>). Similarly, all students in face-to-face and hybrid courses must also complete the Mason COVID Health Check daily, seven days a week. The COVID Health Check system uses a color code system and students will receive either a Green, Yellow, or Red email response. Only students who receive a "green" notification are permitted to attend courses with a face-to-face component. If you suspect that you are sick or have been

directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green email and are thereby permitted to be in class.

Facemask Requirements: Students are required to follow Mason's current policy about facemask-wearing. As of August 11, 2021, all community members are required to wear a facemask in all indoor settings, including classrooms, unless Disability Services has approved an accommodation. An appropriate facemask must cover your nose and mouth at all times in our classroom (see <https://www2.gmu.edu/safe-return-campus/personal-and-public-health/face-coverings>). If this policy changes, you will be informed.