

GEOL 305: ENVIRONMENTAL GEOLOGY
Spring 2022 Syllabus

Professor: Dr. Geoff Gilleaudeau

Lecture Meeting Time: Tuesdays and Thursdays 3 to 4:15pm

Lecture Meeting Place: Exploratory Hall Room 1005

Professor's Office: Exploratory Hall Room 3452

Office Hours: Wednesdays 10:30 to 11:30am or by appointment

Professor's Email: ggilleau@gmu.edu

Course Goals:

Environmental Geology comprises the study of dynamic Earth processes and their relationship to human beings and their environment. This involves varied topics such as natural disasters and biodiversity, as well as land usage, energy resources, and climate change. This course will involve a substantial amount of good ol' physical geology, but will also branch into topics such as physical geography and environmental engineering. The course is also designed to be interactive and writing-intensive, and we will hone our skills in science communication over the course of the semester. It is also meant to be informative on the many issues that are important to our planet.

"Civilization exists by geological consent, subject to change without notice."

— Will Durant

Grading Scheme for GEOL 305:

30%: Leading of discussions

The course is designed so that each week tackles a different broad topic in environmental geology. Typically, on Tuesdays, I will give an introductory lecture on the topic at hand. Then, on Thursdays, there will be a student-led discussion of the topic based on several assigned readings. Students will lead class discussions in groups of 3, and each student will lead the discussion 3 times throughout the course of the semester.

The discussion-leading groups are encouraged to be creative in the use of class time. Some ideas for taking the lead include (but are not limited to):

- Beginning the class period with a PowerPoint providing necessary background information on each of the readings
- Preparing a list of discussion questions
- Designing a classroom activity that illustrates key concepts/linkages
- Promoting participation in a stress-free, idea-sharing environment

A grading rubric for the discussion leads will be provided in a separate document.

40%: Weekly write-ups

For the 9 weeks that you are NOT leading a Thursday discussion, each student is required to turn in a short write-up summarizing the broad concepts covered that week. It should be ~1-2 pages (single-spaced), written in scientific style, and refer to both the lecture and each of the readings assigned. A grading rubric for these write-ups will be provided in a separate document.

These will be due by class time on Tuesday of the following week via Blackboard. 10% will be taken off for each day late.

30%: Term paper on a topic of your choice

Each student will choose a topic related to environmental geology for an ~10-15-page (double-spaced) term paper. In this paper, students will be required to investigate the scientific literature beyond what has been assigned in class. See schedule below for due dates. This 30% of your grade will be divided as follows:

- 10%: your first draft
- 10%: your peer review of a classmate's paper
- 10%: your final paper

Rubrics and suggestions for your paper and peer review will be provided in a separate document.

You are strongly encouraged to use the GMU Writing Center for help drafting your term paper:

<https://writingcenter.gmu.edu/>

***There will be no final exam on the date assigned by the university.**

Final Grading Scale:

97 to 100% = A+	73 to 76% = C
93 to 96% = A	70 to 72% = C-
90 to 92% = A-	67 to 69% = D+
87 to 89% = B+	63 to 66% = D
83 to 86% = B	60 to 62% = D-
80 to 82% = B-	Less than 60% = F
77 to 79% = C+	

Academic Integrity

The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted 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 on a particular assignment,

ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. If you have any doubts about what constitutes plagiarism, please see me.

Disability Accommodations

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu | Phone: (703) 993-2474

Privacy

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.

COVID-19

The COVID-19 pandemic has been incredibly difficult on everyone. I am very excited to be teaching in-person this semester! That said, we have a responsibility to keep everyone safe to insure that in-person classes are here to stay. If you are feeling sick, **DO NOT COME TO CLASS**. You will be given ample opportunity to make up the work. If you have concerns of any kind regarding safety and health procedures, please feel free to reach out to me at any time. Your concerns will be taken seriously and it will not affect your grade. Communication is key and we are all in this together!

Semester Schedule:

Day	Date	Lecture Topic	Class Led By
Tues	25-Jan	Course introduction	Geoff
Thurs	27-Jan	Physical geology background	Geoff
Tues	1-Feb	Volcanoes background	Geoff
Thurs	3-Feb	Class discussion: Vesuvius eruption	Students 1, 2, 3
Tues	8-Feb	Earthquakes background	Geoff
Thurs	10-Feb	Class discussion: New Madrid fault zone	Students 4, 5, 6
Tues	15-Feb	Bolide impact background	Geoff
Thurs	17-Feb	Class discussion: the K-Pg impact event	Students 7, 8, 9
Tues	22-Feb	Hurricanes background	Geoff
Thurs	24-Feb	Class discussion: Hurricane Katrina	Students 10, 11, 12
Tues	1-Mar	Rivers and flooding introduction One paragraph on term paper topic due by class time via Blackboard	Geoff
Thurs	3-Mar	Class discussion: Mississippi flood of 1927	Students 1, 4, 7
Tues	8-Mar	Land usage and soils introduction	Geoff
Thurs	10-Mar	Class discussion: The Dust Bowl	Students 2, 5, 10
Tues	15-Mar	Spring Break No Class	No Class
Thurs	17-Mar	Spring Break No Class	No Class
Tues	22-Mar	Petroleum geology introduction	Geoff
Thurs	24-Mar	Class discussion: Shale gas development	Students 3, 8, 11
Tues	29-Mar	Term paper and peer review discussion Term paper first draft due by class time via Blackboard	Geoff
Thurs	31-Mar	Economic geology introduction	Geoff
Tues	5-Apr	Class discussion: Rare-earth element mining	Students 6, 9, 12
Thurs	7-Apr	No Class Peer review due by class time via Blackboard	No Class
Tues	12-Apr	Paleoclimate introduction	Geoff
Thurs	14-Apr	Class discussion: Geoengineering to mitigate climate change	Students 2, 8, 10
Tues	19-Apr	Ocean chemistry introduction	Geoff
Thurs	21-Apr	Class discussion: Ocean acidification	Students 3, 5, 11
Tues	26-Apr	Ocean redox introduction	Geoff
Thurs	28-Apr	Class discussion: Ocean deoxygenation	Students 4, 9, 12
Tues	3-May	Wildfires in Earth history	Geoff
Thurs	5-May	Class discussion: Wildfires in the western US Final term paper due by class time via Blackboard (10% will be taken off for each day late)	Students 1, 6, 7

Preliminary student assignments (organized alphabetically):

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| 1 = Mason Brown | 7 = Glenn Melendez |
| 2 = Eduardo Castillo | 8 = Daniel Seim |
| 3 = Brittney DePoto | 9 = Michael Sengmong |
| 4 = Brian Gosnell | 10 = Ryan Thomas |
| 5 = Katie Lau | 11 = Lauren West |
| 6 = Connor Lyons | 12 = Kiran Yousaf |