

GEOL 305: ENVIRONMENTAL GEOLOGY
Spring 2020 Syllabus

Professor: Dr. Geoff Gilleaudeau

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

Lecture Meeting Place: Virtual via Blackboard Collaborate Ultra

Professor's Office: Exploratory Hall Room 3452 (mostly online now)

Office Hours: Any available time by appointment

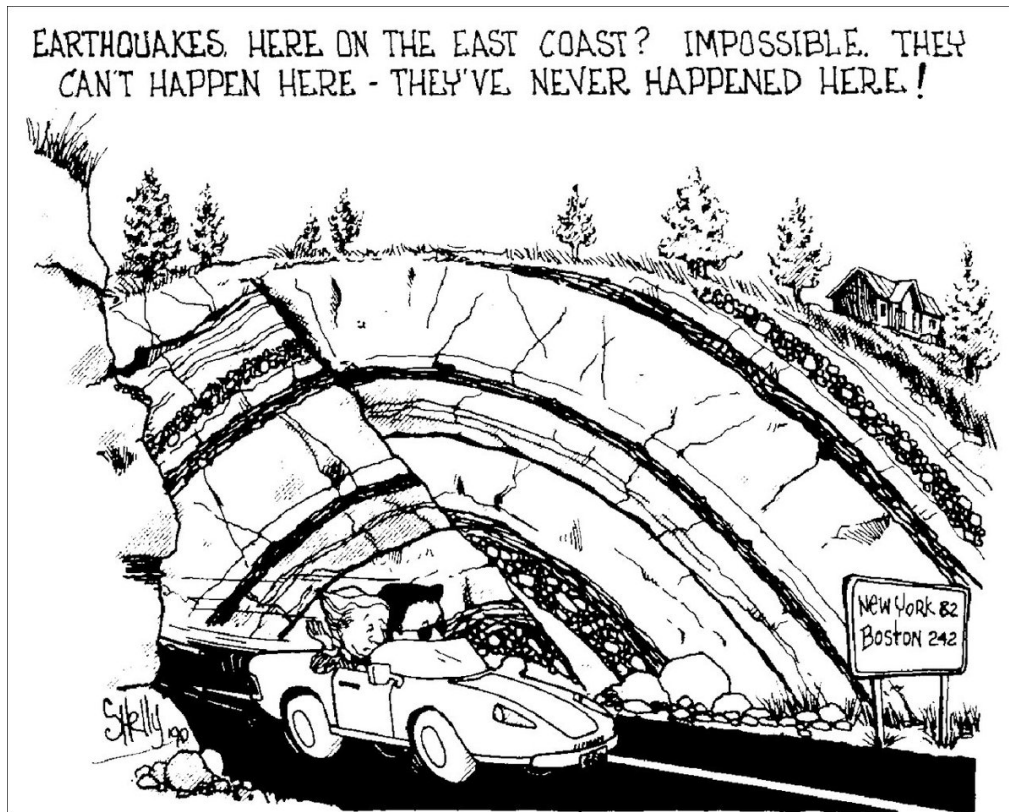
Professor's Email: ggilleau@gmu.edu

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 or 4, and each student will lead the discussion three 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 page (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. 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-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.

***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.

Basic Course Technology Requirements

- *Activities and assignments in this course will regularly use the Blackboard learning system, available at <https://mymason.gmu.edu>. Students are required to have regular, reliable access to a computer with an updated operating system (recommended: Windows 10 or Mac OSX 10.13 or higher) and a stable broadband Internet connection (cable modem, DSL, satellite broadband, etc., with a consistent 1.5 Mbps [megabits per second] download speed or higher. You can check your speed settings using the speed test on this website.)*

- *Activities and assignments in this course will regularly use web-conferencing software (Blackboard Collaborate / Zoom). In addition to the requirements above, students are required to have a device with a functional camera and microphone. In an emergency, students can connect through a telephone call, but video connection is the expected norm.*

Course Materials and Student Privacy

All course materials posted to Blackboard or other course site are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

- *Video recordings — whether made by instructors or students — of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class*
- *Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class*

*****The Bottom Line for COVID-19*****

- You need access to a strong internet connection with video and audio for all remote meetings. I expect you to have your videos on and be actively engaged in discussion throughout the class.
- **Communication is key.** If you are feeling uncomfortable in any way with COVID-19-related issues (or any issues in the course for that matter), reach out to me right away. Your concerns will be taken seriously and be accommodated to the best of my ability. It will not affect your grade in any way.
- The pandemic has been incredibly difficult on everybody. My hope is that this course will allow us to have fun with science and open our minds to the many issues that are important to everyone who lives on planet Earth. We are all in this together ☺.

Semester Schedule:

Day	Date	Lecture Topic	Class Led By
Tues	26-Jan	Course introduction	Geoff
Thurs	28-Jan	Physical geology background	Geoff
Tues	2-Feb	Volcanoes background	Geoff
Thurs	4-Feb	Class discussion: Vesuvius eruption	Students 1, 2, 3, 4
Tues	9-Feb	Earthquakes background	Geoff
Thurs	11-Feb	Class discussion: New Madrid fault zone	Students 5, 6, 7, 8
Tues	16-Feb	Bolide impact background	Geoff
Thurs	18-Feb	Class discussion: the K-Pg impact event	Students 9, 10, 11
Tues	23-Feb	Hurricanes background	Geoff
Thurs	25-Feb	Class discussion: Hurricane Katrina	Students 12, 13, 14
Tues	2-Mar	Rivers and flooding introduction One paragraph on term paper topic due by class time	Geoff
Thurs	4-Mar	Class discussion: Mississippi flood of 1927	Students 1, 5, 9
Tues	9-Mar	Land usage and soils introduction	Geoff
Thurs	11-Mar	Class discussion: The Dust Bowl	Students 2, 6, 12
Tues	16-Mar	Petroleum geology introduction	Geoff
Thurs	18-Mar	Class discussion: Shale gas development	Students 3, 7, 10, 13
Tues	23-Mar	Economic geology introduction Term paper first draft due in class	Geoff
Thurs	25-Mar	Class discussion: Rare-earth element mining	Students 4, 8, 11, 14
Tues	30-Mar	No Class: finish working on peer review	No Class
Thurs	1-Apr	Term paper discussion Peer review due by class time	Everyone
Tues	6-Apr	Paleoclimate introduction	Geoff
Thurs	8-Apr	Class discussion: Geoengineering to mitigate climate change	Students 1, 6, 12
Tues	13-Apr	Ocean chemistry introduction	Geoff
Thurs	15-Apr	Class discussion: Ocean acidification	Students 2, 7, 13
Tues	20-Apr	Ocean redox introduction	Geoff
Thurs	22-Apr	Class discussion: Ocean deoxygenation	Students 3, 5, 10, 14
Tues	27-Apr	Guest lecture: plastic pollution introduction	Geoff
Thurs	29-Apr	Class discussion: marine plastic pollution Final term paper due in class (10% will be taken off for each day late)	Students 4, 8, 9, 11

Preliminary student assignments (organized alphabetically):

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|---------------------|-------------------------|
| 1 = Storm Barrett | 8 = Jason Lee |
| 2 = Sarah Boyt | 9 = Zabrina Lewis |
| 3 = Kiana Eleazer | 10 = Alex Murphy |
| 4 = Alexander Glenn | 11 = Ashley Robertson |
| 5 = Zach Hackfield | 12 = Zach Sauter |
| 6 = Maggie Holland | 13 = Maxwell Torrington |
| 7 = Kundan Krushu | 14 = James Truelove |