GEOL 304/504: SEDIMENTARY GEOLOGY
Fall 2024 Syllabus

Professor: Dr. Geoff Gilleaudeau
Lecture Meeting Time: Mondays and Wednesdays 9:00 to 10:15am
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 Textbook: Principles of Sedimentology and Stratigraphy, Fifth Edition by Sam Boggs Jr.

Laboratory Instructor: Madison Thompson
Laboratory Meeting Time: Mondays 1:30 to 4:15pm
Laboratory Meeting Place: Exploratory Hall Room 1005
Laboratory Instructor's Office: Exploratory Hall Room 3418
Laboratory Office Hours: Tuesdays 3:00 to 5:00pm or by appointment
Laboratory Instructor's Email: sthomp36@gmu.edu

Course Goals:

Sedimentary strata represent the pages of Earth's history book and, in this course, we will learn how to properly read that history from the scale of individual sedimentary grains to macrostratigraphic changes through large intervals of geologic time. Topics will include: weathering and the origin of sedimentary grains, sediment transport and fluid flow, sedimentary structures, siliciclastic and carbonate petrology and diagenesis, depositional environments and facies models, lithostratigraphy and biostratigraphy, as well as sequence stratigraphy and basin analysis. The overarching goal is to become proficient readers of Earth's vast, complex, yet critically important sedimentary record. This will be achieved through interactive lectures and labs, with emphasis also placed on our local natural laboratory—the Appalachian Mountains.

*"What clearer evidence could we have had of the different formation of these rocks, and of the long interval which separated their formation, had we actually seen them emerging from the bosom of the deep?...**The mind seemed to grow giddy by looking so far into the abyss of time**."*
— James Hutton

Grading Scheme for GEOL 304:

15%: Mid-term exam 1
15%: Mid-term exam 2
20%: Final exam
35%: Laboratory component of the course
15%: Field trip assignments

*Lab assignments are due at the beginning of the following lab period. 10% will be deducted for each week late.

*There are 11 labs scheduled for the semester. ONE lab grade will be dropped, so that your final lab grade will consist of your 10 best labs.

*There are two required weekend field trips scheduled for this semester. On Saturday, October 5th, we plan a day trip to Sideling Hill in Maryland. On the weekend of November 16th and 17th, we plan an overnight trip to Corridor H in West Virginia. These trips will form the basis of the field trip assignments.

*All exams will be OPEN NOTE. This means you cannot have the textbook or your entire notebook with you for the exam; rather, you will be allowed to bring FIVE PIECES OF PAPER with you to the exam containing information of your choosing. This will encourage you to summarize information and re-write your notes before the exam, which will hopefully lead to greater retention of the material than normal cramming for an exam.

Grading Scheme for GEOL 504:

10%: Mid-term exam 1
10%: Mid-term exam 2
15%: Final exam
35%: Laboratory component of the course
15%: Field trip assignments
15%: Term paper

Final Grading Scale:

97 to 100% = A+	73 to 77% = C
93 to 97% = A	70 to 73% = C–
90 to 93% = A–	67 to 70% = D+
87 to 90% = B+	63 to 67% = D
83 to 87% = B	60 to 63% = D–
80 to 83% = B–	Less than 60% = F
77 to 80% = C+	

Semester Schedule:

Day	Date	Lecture Topic	Lab Topic
Mon	26-Aug	Introduction	No lab on first week
Wed	28-Aug	Weathering and soils	
Mon	2-Sept	No Class Labor Day	No Class Labor Day
Wed	4-Sept	Grain size and sorting; sediment transport and fluid flow	
Mon	9-Sept	Grain shape and packing; bedforms	Grain size analysis
Wed	11-Sept	Sedimentary structures	
Mon	16-Sept	Siliciclastic petrology	Sedimentary structures
Wed	18-Sept	Siliciclastic diagenesis	
Mon	23-Sept	No class, GSA meeting	No lab, GSA meeting
Wed	25-Sept	Carbonate chemistry (Brittany Hupp lecture)	
Mon	30-Sept	Carbonate petrology	Siliciclastic hand samples
Wed	2-Oct	Appalachian geology	
Sat	5-Oct	FIELD TRIP: Sideling Hill, MD	
Mon	7-Oct	Carbonate diagenesis	Siliciclastic thin sections
Wed	9-Oct	MIDTERM 1	
Mon	14-Oct	No Class Fall Break	No Lab Fall Break
Wed	16-Oct	Other chemical sediments	
Mon	21-Oct	Introduction to facies models; alluvial environments	Carbonate hand samples
Wed	23-Oct	Fluvial environments	
Mon	28-Oct	Deltaic environments	Carbonate thin sections
Wed	30-Oct	Coastal and shelf environments	
Mon	4-Nov	Slope and deep-sea environments	Stratigraphic columns
Wed	6-Nov	Carbonate environments	
Mon	11-Nov	MIDTERM 2	Facies and depositional environments
Wed	13-Nov	Lithostratigraphy	
Sat-Sun	16-Nov to 17-Nov	FIELD TRIP: Corridor H, WV	
Mon	18-Nov	Biostratigraphy	Well logging
Wed	20-Nov	Chemostratigraphy	
Mon	25-Nov	Chronostratigraphy and the geologic time scale	Biostratigraphy
Wed	27-Nov	No Class Thanksgiving	
Mon	2-Dec	Sequence stratigraphy	Sequence stratigraphy
Wed	4-Dec	Secular trends in the sedimentary record and Earth history	
Mon	16-Dec	FINAL EXAM (currently scheduled for 7:30-10:15am)	

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 Mason 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.

Policy on Chat GPT or other AI tools:

Chat GPT or other AI tools can be used to get started on researching a topic or gathering sources used in the assignments for this class. However, you **CANNOT turn in text for any assignment in this class that was written directly by Chat GPT or another AI tool**. Any text handed in written by an AI tool will be given an automatic zero and be reported to the university academic integrity office. Handing in AI-written work is cheating.

Extra Credit Opportunity:

Our department has a weekly geology seminar where experts from around the world are invited to share the cutting edge of geological research on a variety of topics. It occurs every **Thursday from 4:30 to 5:45pm in Exploratory Hall 1309**. By attending this seminar each week, you can earn up to an additional 5% boost on your final grade at the end of the semester. There are 14 scheduled seminars for the semester, so I will adjust your grade boost depending on how many of the 14 you attend. I will be there each week to keep track, so all you need to do is show up and stay for the seminar. There is free food and drinks. This is a great extra credit opportunity and you will also learn a ton about a variety of geological topics!