



PALEOCLIMATOLOGY

GEOL 332 001

BIOL 417 003

GEOL 532 001

Fall 2025

Instructor: Dr. Stacey Verardo

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Class Hours: Tuesdays and Thursdays, 9:00–10:15am

Class Room: Exploratory Hall 1309

Office: Exploratory Hall 3411

Office Hour: Thursdays, Noon -1:00pm

Goals and Objectives: This course will explore the natural evolution of Earth's climate with the goal of providing a baseline for understanding present climate variability and future trends through increased knowledge of the physical, chemical, and biological processes that influence climate over the long-term.

Text: Earth's Climate, Past and Future, Ruddiman, 2011 3rd ed

There will also be additional readings that I will include in CANVAS

To be successful in this (and any) class

- 1) Keep up with the textbook readings. Do NOT binge study the night before the exams!
- 2) Attend EACH class.
- 3) Rewrite/retype your notes after EACH class. If something needs clarification, contact me!
- 4) Each hour in class should equal out to about an hour studying away from the classroom

LECTURES

<u>Dates</u>	<u>Lecture Topic</u>	<u>Chapters</u>
August 26	Overview of Climate Science	1
August 28	Earth's Climate System Today	2
September 2	Climate Archives	3
September 4	Carbon Dioxide and Phosphorous	
September 9	CO ₂ and Long-Term Climate	4
September 11	Plate Tectonics and Climate	5
September 16	Greenhouse Earth	6

September 18	Icehouse Earth	7
September 23	Review	
September 25	EXAM 1	
September 30	Astronomical Control of Solar Radiation	8
October 2	Insolation Control of Monsoons	9
October 7	Insolation Control of Ice Sheets	10
October 9	Orbital Scale Changes in CO ₂ and CH ₄	11
October 14	Orbital Scale Interactions	12
October 16	Last Glacial Maxima	13
October 21	Climate During and the last Deglaciation	14
October 23	Review	
October 28	EXAM 2	
October 30	Millennial Oscillations in Climate	15
November 4	NO CLASS -ELECTION DAY	
November 6	Humans and Preindustrial Climate	16
November 11	Climate Change over past 1000yrs	17
November 13	Climate since 1850	18
November 18	Causes of Warming over last 125yrs	19/20
November 20	presentations	
November 25	presentations	
November 27	NO CLASS -THANKSGIVING BREAK	
December 2	Review	
December 4	wrap up	
December 11	FINAL EXAM 7:30-10:00am NOTE different start time!!	

Grading:

- Three equally weighted exams. Make up exams will NOT be given.
- The undergraduate and graduate exams will NOT be the same. All exams will emphasize material presented in the lectures and textbook readings.
- The grading scale is 89-100=A, 78-88=B, 67-77=C, 55-66=D, <55=F
- Undergraduate level students (GEOL 332/BIOL417) –TWO of you will work TOGETHER on a 15-minute presentation (~15 slides) relating to of one of the text chapters OR a related topic.
- For the graduate level students (GEOL 532) –EACH of you will work on ONE 20-minute presentation (~15 slides) relating to of one of the text chapters, OR a related topic.
- Presentation topic is due by Thursday, September 4, 2025

Attendance at all scheduled lecture classes is required to achieve the requisite level of knowledge in this course.

GMU POLICY GUIDELINES

Integrity: GMU has an Honor Code with guidelines regarding academic integrity; please see <http://oai.gmu.edu> for more information.

Disability: If you are a student with a disability and you need academic accommodations, please see me and also contact the Office of Disability Services (ODS) <http://ods.gmu.edu>. All academic accommodations must be arranged through the ODS. You will need to contact this office prior to any special accommodation.

Privacy: Students must use their MasonLive email account to receive important University information, including messages related to this class. Please see <http://masonlive.gmu.edu> for more information.

Electronics: Please be respectful of our time together and do not engage in activities that are unrelated to class. Cell phones may be left on but muted and used for emergencies only.

Use of Artificial Intelligence Tools: The judicious use of AI tools is permitted for class work as an aid in learning but not as a replacement for original independent work.