



PALEOCLIMATOLOGY

GEO 332 001

BIO 417 003

GEO 532 001

Fall 2023

Instructor: Dr. Stacey Verardo
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Class hours: Tuesdays and Thursdays, 9:00–10:15am

Class room: Exploratory Hall 1309

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 readings from current material.

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

Dates	Lecture Topic	Chapters
August 22	Overview of Climate Science	1
August 45	Earth's Climate System Today	2
August 29	Climate Archives	3
August 31	Carbon Dioxide and Phosphorous	
September 5	CO ₂ and Long-Term Climate	4
September 7	Plate Tectonics and Climate	5
September 12	Greenhouse Earth	6
September 14	Icehouse Earth	7

September 19	Review	
September 21	EXAM 1	
September 26	Astronomical Control of Solar Radiation	8
September 28	Insolation Control of Monsoons	9
October 3	Insolation Control of Ice Sheets	10
October 5	Orbital Scale Changes in CO ₂ and CH ₄	11
October 10	NO CLASS -COLUMBUS DAY BREAK	
October 12	Orbital Scale Interactions	12
October 17	Last Glacial Maxima	13
October 19	Climate During and the last Deglaciation	14
October 24	Review	
October 26	EXAM 2	
October 31	Millennial Oscillations in Climate	15
November 2	Atlantic Conveyor Circulation	
November 7	Humans and Preindustrial Climate	16
November 9	Climate Change over past 1000yrs	17
November 14	Climate since 1850	18
November 16	Causes of Warming over last 125yrs	19/20
November 21	presentations	
November 23	NO CLASS -THANKSGIVING BREAK	
November 28	presentations	
November 30	Review	
December 7	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 (~30 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 (~30 slides) relating to of one of the text chapters, OR a related topic.
- Presentation topic is due by Thursday, September 7, 2023

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.

Diversity: Diversity is a core value at GMU; please see <http://ctfe.gmu.edu/professional-development/mason-diversity-statement> for more information.

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.