GEOS_OX 115 —**Meteorology and Climatology**
Oxford College, Fall 2017

COURSE INFO

- Instructor: Melissa Hage, melissa.hage@emory.edu
- Lecture Time: Monday, Wednesday, and Friday 10:45 – 11:50 am
- Lecture Location: OSB 223
- Textbook: The Atmosphere: An Introduction to Meteorology (13th ed.) – Lutgens and Tarbuck

- Lab Time: Thursday, 1:40 – 4:40 pm
- Lecture Location: OSB 223
- Lab Manual: Exercises for Weather & Climate (9th ed.) - Carbone

OFFICE HOURS

- Wednesday 2:30 pm – 4:30 pm
- By appointment or chance. I am usually in my office from 8:30 am – 5:00 pm, except for when I am teaching classes or attending meetings.

OVERVIEW

Few subjects within Earth Sciences are as far reaching as the study of weather (meteorology) and climate (climatology). We plan our days based on the current weather, plant food supplies based on seasonal forecasts, and develop economies based on regional climate. Weather and climate also explain major biogeographic patterns and influence physical processes shaping Earth. With unprecedented climate changes likely inevitable in our lifetimes, the study of weather and climate has also taken on added importance in recent decades. In this course we will build a physical understanding of how Earth systems interact to create the weather we see on a daily basis and the climatic patterns that emerge at larger spatial and temporal scales. The end of the course focuses on understanding the current predictions for global and regional climate change based on the Intergovernmental Panel on Climate Change's (IPCC) fourth assessment.

OVERARCHING STUDENT LEARNING OBJECTIVES

After the completion of this course, you will be able to:

1. Analyze, describe, and plot the major atmospheric processes controlling weather and climate, including radiation budgets, pressure gradients, frontal movement, and air masses.
2. Describe the atmosphere's structure and how meteorological parameters (temperature, air pressure, humidity) vary in time and space
3. Make use of on-line weather and climate resources to assist in planning daily activities.
4. Understand the physical processes that control the Earth’s weather and climate systems.
5. Understand the linkages between climate, soil, vegetation, and biota.
6. Describe the methods used to reconstruct past climates and predict future climates.
7. Develop and express an informed opinion on the causes, likelihood, and consequences of human-caused global climate change.

GRADING AND ASSESSMENT

	%
Exam 1	9
Exam 2	9
Exam 3	9
Exam 4	9
Participation and Homework	10
Weather Journal	9
In-Class Quizzes	9
Lab	36
Total	100

Letter Grade	Percent Equivalent
A	93-100
A-	90-92.9
B+	87-89.9
B	83-86.9

Letter Grade	Percent Equivalent
B-	80-82.9
C+	77-79.9
C	73-76.99
C-	70-72.99

Letter Grade	Percent Equivalent
D+	67-69.9
D	63-66.9
D-	60-62.9
F	0-59.9

* Note: I do not curve grades. I also do not ***give*** grades. **Your final grade in this class will be based on what you have earned.**

** I am more than happy to discuss your overall grade or a grade you earned on a specific assignment. However, **I will not do so via email**. If you would like to discuss your grade, please come and see me in person during office hours or make an appointment.

COURSE POLICIES

Weekly Readings: The textbook readings are the primary source of information for this course. Class periods will be spend reviewing, discussing, and illustrating concepts presented in the text, thus *it is essential that you read the assigned materials before class meets on the assigned date*.

Canvas: Most of the course materials (syllabus, lecture notes, handouts, readings, videos, assignments, etc.) will be posted on Canvas. Several assignments will be submitted via Canvas. It is imperative that you feel comfortable using this website. If you have questions, please do not hesitate to come and talk to me about navigating Canvas.

In-Class Participation: Class attendance is important and I expect you all to show up to class on time, prepared, and ready to participate. You should bring your textbook, lab manual, calculator, and more than one color pen to every class. That being said, you are all adults and capable of making the decision about whether you chose to come to class or not. Thus, attendance will not be taken in the traditional way. There will be daily in-class activities designed to check for preparation and understanding, generate discussion, encourage participation, and deepen comprehension of the course material. For some of these activities, full points will be awarded for participation. For other activities, half points will be awarded for participation and full points will be awarded for correctness. There will be no make-ups for missed participation; however, the lowest 3 grades will

be dropped at the end of the semester. There are no excused absences for lecture. The dropping of the 3 lowest participation grades act as your missing class freebies and can be used for any reason (illness, studying, travel, family emergency, wild monkeys breaking into your dorm, etc.). Any additional missed classes will count as zeros for that day's participation. Missing class regularly will have a detrimental effect on your grade.

Extra Credit: Extra credit is designed to help those students that have been trying all semester and just need a little extra help. It is not meant to be a backup plan for not working hard all semester. If I decide to offer extra credit, it can only be completed if you have attended at least 90% of the classes between the first day of class and Nov. 20.

In-Class Quizzes: Quizzes will be administered throughout the semester the to check for content understanding and to ensure you are engaging in distributive studying. These will be partially cooperative quizzes:

Part 1: You will independently take the quiz
Part 2 (optional): You can re-take the quiz, but will work in your group

Your final quiz score is based upon 75% from Part 1 and 25% from Part 2. If you choose not to complete the group quiz or if your grade on Part 1 is higher than Part 2, only your grade from Part 1 will count. Bottom line: taking the cooperative quiz will not negatively affect your quiz grade. If you are late or absent, you will not be able to make up the quiz without a legitimate excuse presented **prior** to the quiz. Some quizzes will be announced, others will not. The lowest quiz grade will be dropped at the end of the semester.

Homework: There will be a handful of homework assignments given throughout the semester. They will count towards your participation grade, but these assignments will NOT be allowed to be any of the 3 lowest participation grades dropped.

Late Assignments: Many assignments will be turned in via Canvas. All of these assignments will be due at 10:00 am on the day they are due. If an assignment is due in class, it will be due at the start of class. If it is turned in at the end of class, it is considered late. Assignments will be accepted up to 2 days past the due date. Scores on late assignments will be penalized 10 points each day they are late. So if an assignment is due in class on a Monday at 10:45 am and you turn it in between Monday at 10:46 am and Tuesday at 10:45 am, you will loose 10 points. If you turn it in between Tuesday at 10:46 am and Wednesday at 10:45 am, you will loose 20 points. You may not turn in the assignment after 10:45 am on Wednesday.

Exams: There are 4 exams: 3 in-class exams and a final. The three in-class exams will cover course materials directly preceding them. The final will be partially comprehensive. This means that the majority of the exam will cover the course material directly preceding it, however some of the larger-scale concepts that we keep coming back to throughout the semester will also be on the exam. Ordinarily, exams cannot be made up. If you miss an exam due to an excused absence, you must notify me prior to the time of the exam and schedule a time to take the exam. If the absence is not excused, you will be given a zero for the missed exam. Students are cautioned that any excuse for missing an exam will come under sever scrutiny and I will make the final decision regarding whether or not a missed exam is acceptable.

The college sets the final exam schedule. Leaving early for rides or flights, vacations, relatives' or friends' weddings or graduations, jobs, or having more than one exam on one day are NOT considered valid reasons to request an earlier or later exam date/time.

Weather Journal: You are responsible for keeping a weather journal for two weeks of the semester. You are responsible for downloading current weather observations and the weather forecast for three days for a given U.S. location or region (can be the entire US) and then following up with actual weather observations for those three days. For each week's journal entry, you should (1) summarize the original observations and forecast you downloaded; (2) compare observations of several weather metrics (e.g. temperature, dew point, winds, precipitation) to realized values; (3) comment on the accuracy of the original forecast; and (4) include some comparison between the week's weather and the location's or region's climatology (e.g. were any records broken, how (un)usual was the week's weather?). The weather journal should be no longer than two (1.5 line-spaced) pages of text (12-pt, Times New Roman font), and you should include graphics and/or tables of your data to support your statements (*length criterion does not include graphics)*. A grading rubric and example journal entry will be provided separately on Canvas.

Classroom Conduct: In order to maintain a good learning environment, rude and/or disruptive behavior will NOT be tolerated. You will be asked to leave the class if your behavior is deemed inappropriate. The following are considered rude and disruptive:

(1) Consistently arriving late to class
(2) Private conversations during class
(3) Lack of attention during class
(4) Habitually leaving and returning to class in one class period
(5) Allowing your cell phone to ring/vibrate on numerous occasions

Tardiness: I view tardiness as rude and disrespectful to both myself and to the rest of the class. I do, however, understand that sometimes it just happens. You are allowed to be late 3 times, after which you will not receive participation points for every day after that you are late. If you are late to class on a day there is a quiz, you will not be allowed to take the quiz. If you are late to class on a day when a homework assignment is due, that homework assignment will be considered late.

Acceptable Laboratory Absences: There are no excused absences for lab. However, on rare occasions, illness, family emergencies and certain school-sponsored events may make it necessary for a student to miss a lab session. You must notify me BEFORE the day of the absence in all but the most extreme emergencies. In all cases, I will make the final decision regarding whether or not an absence is acceptable. An unexcused absence from lab results in a 5-point reduction in the final grade. Two unexcused lab absences will result in the failure of the course.

Religious Holidays: Instructors are encouraged, not required, to accommodate students' academic needs related to religious holidays. Please make every effort to negotiate your religious holiday needs within the first two weeks of the semester; waiting longer may compromise your instructor's ability to extend satisfactory arrangements. If you need guidance negotiating your needs related to a religious holiday, the College Chaplain, Rev. Lyn Pace, ppace@emory.edu, Candler Hall 202, is willing and available to help. Rev. Pace is not tasked with excusing students from classes or writing excuses for students to take to their professors. Emory's official list of religious holidays may be found at http://www.religiouslife.emory.edu/faith_traditions/holidays.html

Cell Phones: The use of cell phones is not allowed in the classroom and the laboratory, unless I give you specific instructions to use them. Please turn off your phone before you come to class and leave your phone at the front during exams. Cell phones cannot be used as a calculator on any quizzes or exam.

Personal Computer: If you would like to take notes on your personal laptop in class you must ask for special permission. Use of laptops to surf the web, login to Facebook, Skype or other networking/chat during class is unprofessional and unacceptable.

Honor Code: All examinations and all work for credit in this course comes under the regulations of the Honor Code. Your signature on your work attests to your upholding the Honor Code. Please read the information on **plagiarism** on the Library web page and always ask if you have any questions about assignments.

Policy regarding students with disabilities: The Office of Accessibility Services (OAS) works with students who have disabilities to provide reasonable accommodations. In order to receive consideration for reasonable accommodations, students must contact OAS and complete the registration process. Faculty may not provide disability accommodations until an accommodation letter has been processed; accommodations are not retroactive. Students registered with OAS who receives a letter outlining specific academic accommodations are strongly encouraged to coordinate a meeting time with their professor to discuss a protocol to implement the accommodations as needed throughout the semester. This meeting should occur as early in the semester as possible. Contact OAS for more information at (770) 784-4690 or oas_oxford@emory.edu. Additional information available at: http://equityandinclusion.emory.edu/access/students/index.html.

SYLLABUS OF LECTURE TOPICS

	Date	Lecture Topic	Textbook	HW/Quizzes
W	Aug. 23	Introduction to the class and atmosphere	Ch. 1	
Th	*Aug. 24*	*NO LAB*		
F	Aug. 25	Intro to Atmosphere	Ch. 1	
M	Aug. 28	Intro to Atmosphere	Ch. 1	
W	Aug. 30	Heating Earth's Surface and Atmosphere	Ch. 2	Quiz 1
Th	*Aug. 31*	*Lab -*		
F	Sept. 1	Heating Earth's Surface and Atmosphere	Ch. 2	
M	**Sept. 4**	**NO CLASS – Labor Day**		
W	Sept. 6	Temperature	Ch. 3	Quiz 2
Th	*Sept. 7*	*Lab -*		
F	Sept. 8	Temperature	Ch. 3	
M	Sept. 11	**No class - Irma**		
W	Sept. 13	Moisture and Atmospheric Stability	Ch. 4	
Th	*Sept. 14*	*Lab -*		
F	Sept. 15	Moisture and Atmospheric Stability	Ch. 4	Quiz 3
M	Sept. 18	Exam 1		
W	Sept. 20	Condensation and Precipitation	Ch. 5	
Th	*Sept. 21*	*Lab -*		
F	Sept. 22	Air Pressure and Winds	Ch. 6	
M	Sept. 25	Air Pressure and Winds	Ch. 6	
W	Sept. 27	Circulation of the Atmosphere	Ch. 7	Quiz 4
Th	*Sept. 28*	*Lab -*		
F	Sept. 29	Circulation of the Atmosphere	Ch. 7	
M	Oct. 2	Air Masses	Ch. 8	Quiz 5
W	Oct. 4	Air Masses	Ch. 8	
Th	*Oct. 5*	*Lab -*		Quiz 6
F	Oct. 6	EXAM 2		
M	**Oct. 9**	**NO CLASS – Fall Break**		
W	Oct. 11	Midlatitude Cyclones	Ch. 9	
Th	*Oct. 12*	*Lab -*		
F	Oct. 13	Midlatitude Cyclones	Ch. 9	
M	Oct. 16	Thunderstorms and Tornadoes	Ch. 10	Quiz 7
W	Oct. 18	Thunderstorms and Tornadoes	Ch. 10	
Th	*Oct. 19*	*Lab -*		
F	Oct. 20	Hurricanes	Ch. 11	Quiz 8
M	Oct. 23	Hurricanes	Ch. 11	
W	Oct. 25	Hurricanes	Ch. 11	

Th	*Oct. 26*	*Lab -*		
F	Oct. 27	Weather Analysis and Forecasting	Ch. 12	Quiz 9
M	Oct. 30	Weather Analysis and Forecasting	Ch. 12	
W	Nov. 1	Air Pollution	Ch. 13	
Th	*Nov. 2*	*Lab -*		
F	Nov. 3	Air Pollution	Ch. 13	Quiz 10
M	Nov. 6	EXAM 3		Start weather journal
W	Nov. 8	World Climates	Ch. 15	
Th	*Nov. 9*	*Lab -*		
F	Nov. 10	World Climates	Ch. 15	
M	Nov. 13	Optical Phenomena of the Atmosphere	Ch. 16	Quiz 11
W	Nov. 15	Optical Phenomena of the Atmosphere	Ch. 16	
Th	*Nov. 16*	*Lab -*		
F	Nov. 17	Climate Change	Ch. 14	Quiz 12
M	Nov. 20	Climate Change	Ch. 14	
W	**Nov. 22**	**NO CLASS – Thanksgiving Break**		
Th	**Nov. 23**	**NO LAB – Thanksgiving Break**		
F	**Nov. 24**	**NO CLASS – Thanksgiving Break**		
M	Nov. 27	Climate Change	Ch. 14	
W	Nov. 29	Climate Change	Ch. 14	Weather journal due
Th	*Nov. 30*	*Lab -*		
F	Dec. 1	Climate Change	Ch. 14	Quiz 13
M	Dec. 4	Climate Change	Ch. 14	
W	Dec. 13	EXAM 4 (9 am – 12 pm)		

*** This schedule subject to change during the semester.**
**** Not all homework assignments are listed here.** You may have additional homework assignments given throughout the semester.
***** All exam and due date conflicts must be resolved within the first two weeks of the semester.**