

Extreme Weather GEO 2242



This class is about the scientific fundamentals of Earth’s atmosphere and the resulting weather and climate systems to understand extreme weather. We will discuss energy balances, global and regional wind circulation, air masses, fronts, forecasting, and high impact storms. We will discuss climate modeling and evaluate how Earth’s climate is changing. Throughout, we will consider the impacts of extreme weather on society and the natural environment.

Class

Time: Monday-Wednesday-Friday periods 4, 10:40am-11:30am

Location: Florida Gymnasium 0260

Materials: While no textbook is required, it can be helpful to have a text that will explain concepts in a different way than you get in lecture. The recommended textbook is:

Understanding Weather and Climate (4th Edition and up), by Aguado and Burt.

Meteorology: Understanding the Atmosphere, by Ackerman and Knox.

A portion of the course notes will be supplied through Canvas (elearning.ufl.edu). The notes will be comprehensive, but the books will provide helpful supplementation, and are a good investment for those who plan to major in a related field.

Instructor

Yixin ‘Berry’ Wen, yixin.wen@ufl.edu

My office: Turlington Hall, Geography Department, Room 3203

Office hours: MWF 12:00-1:00pm. If you want to make an appointment at another time, just email me. I will try to accommodate you as my schedule permits.

Grades

The final grade will be calculated based on the following:

Attendance	10%
Homework	35%
Weather Blog	15%
Exams	40%
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TOTAL	100%

There are NO OPPORTUNITIES FOR EXTRA CREDIT.

Percentages necessary to earn a given final grade are as follows:

A	90.0-100%	B+	87.0-89.9%	C+	77.0-79.9%	D+	67.0-69.9%
		B	83.0-86.9%	C	73.0-76.9%	D	63.0-66.9%
		B-	80.0-82.9%	C-	70.0-72.9%	D-	60.0-62.9%

Grades will be supplied through Canvas throughout the semester. It is your responsibility to keep track of your grade and contact the instructor if you are struggling with the material.

Class Structure

This is a lecture-based class. Important material will be covered in every class. We will use a combination of slide presentations, some videos, and in-class activities. You should listen well during class and take good notes for yourself. Homework assignments and quizzes are designed to synthesize material from the lectures. Weather and climate is a surprisingly complex topic. We'll cover many different parts of how the weather and climate works, and you will have to combine these parts to understand how they work together. Attending class and completing the quizzes and homework on time will be key to understanding the material.

Course Goals

Students should be able to identify and describe the concepts, terminology, and tools pertaining to basic meteorology. This includes:

1. Basic atmospheric characteristics: major components of Earth's climate system, atmospheric composition, solar and terrestrial radiation, seasons, global wind circulation, temperature distribution.
2. Moisture: Global distribution of water vapor, humidity measurements, atmospheric stability, how clouds form and produce precipitation.
3. Air pressure: global and regional wind circulation, air masses, fronts, and jet streams.
4. Hazardous weather: thunderstorms, tornadoes, strong winds, winter storms, tropical cyclones.
5. The causes and implications of climate change both globally and regionally.
6. Basic quantities in weather models and making a prediction.
7. Impact of extreme weather, climate variability, and climate change on society.

Homework

Homework will be available online through Canvas after lectures. Due dates will be on Canvas, and will typically be the start of a class period. There will be no makeup homework exercises. No late work will be accepted unless an extension is approved due to special circumstances (see Absences).

Weather Blog

You pick one US and one international location to examine throughout the course. You will write about those locations throughout the semester using supplied prompts related to the material we are covering. Each of the six posts must be between 300 and 1500 words.

Exams

There will be two exams. All exams are cumulative in nature. All material from the beginning of the semester could be included on any exam, though the focus will be on material covered since the previous exam. The last of the regular exams will be held when the final exam is scheduled.

Schedule The precise dates may change. I will update you as we go.

Week Starting	Monday	Wednesday	Friday	Blogs
9 Jan	Introduction	M1-Atm composition 1	M1-Atm composition 2	
16 Jan	MLK Jr Day	M2-Radiation 1	M2-Radiation 2	
23 Jan	M2-Radiation 3	M3-Energy Balance 1	M3-Energy Balance 2	
30 Jan	M3-Energy Balance 3	M4-Water & Humidity	Water and Humidity 2	#1 Due
6 Feb	M5-Clouds and Rain 1	Clouds and Rain 2	Clouds and Rain 3	
13 Feb	Clouds and Rain 4	M6-Wind 1	Wind 2	
20 Feb	Wind 3	Wind 4	Guest Lecture: Forecast	
27 Feb	M7-Extratropical Cyclones 1	Extratropical Cyclones 2	Extratropical Cyclones 3	#2 Due
6 Mar	Review for exam	Guest Lecture 2: Forecast	Midterm Exam	
13 Mar	Spring Break			
20 Mar	Extratropical Cyclones 4	M8-Forecast	Guest Lecture: NASA data	
27 Mar	M9-Thunderstorms 1	Thunderstorms 2	Thunderstorms 3	
3 Apr	Thunderstorms 4 (tornado)	Thunderstorms (tornado)	M10-Winter Storms	#3 Due
10 Apr	M11-Tropical Cyclone	M11-Tropical Cyclone 2	M12-Flood and Drought	
17 Apr	M13-Climate change	M14-Remote sensing and AI	Blog Presentations	
24 Apr	Blog Presentations	Review	Reading Day	
---	Finals Week Final Exam will be online.			

Class Notes and Grading

There are many introductory meteorology courses of this nature, and so there may be many notes floating around online. In general, I find online meteorological websites to be less helpful than other common subjects. However, the notes I will provide you, as well as information from legitimate subject-relevant textbooks will be considered as the final authority on matters of grading.

Math Content

The study of weather and climate can include some complicated Math! However, since this course is introductory, any equations that we use will be very basic, explained in detail, and provided to you in homework and/or exams (no memorization needed, although you will need to understand what the equation does). A calculator will not be required in class or for homework or exams unless I tell you in advance.

My Expectations of You

You will read materials for a particular class period either before or shortly after class. Learning often isn't the most joyous activity because it requires a significant effort. The nationwide standard for university scholarship says students should study (read, review, reflect, practice, do homework) at least 2 hours for every hour you are in lecture.

Though we will be doing some activities that use the internet during class, please understand that text messaging, visiting Facebook, browsing the internet, etc. during class is a major distraction from learning for your peers as well.

Web page

The class web page can be found at: elearning.ufl.edu/. If you encounter any problems with the web page, do something (anything!) to let the instructor know.

Academic Honesty

"UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class."

Accommodations

"Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester."

Excused Absences

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

"In general, acceptable reasons for absence from or failure to participate in class include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused."

I appreciate that unexpected events occur in all of our lives. If such events occur, and it causes you to attend an event (e.g., funeral, job interview) or a facility (e.g., doctor's office, courthouse), then you will need to prove that you went to this event/facility on that date by providing some form of documentation of the event. An event program, a doctor's note, or similar paperwork will suffice. Upon producing this documentation, you will be able to make up the midterm exam or any graded class activities from that date.

"A student should inform the faculty member of the religious observances of his or her faith that will conflict with class attendance, with tests or examinations, or with other class activities prior to the class or occurrence of that test or activity."

Grades

UF policies on grades and GPAs can be found at:
<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Course Evaluation

"Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.ua.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at gatorevals.ua.ufl.edu/public-results/."

Title IX

For any concerns regarding gender-based discrimination, sexual harassment, sexual assault, dating/domestic violence, or stalking, there are resources available. To learn more or to report an incident, go to: titleix.ufl.edu. A professor/GA/TA is required to report instances of sexual harassment, sexual assault, or discrimination.

Drops, Absences, etc.

Should you decide to drop the course for whatever reason, you must request to do so through the appropriate channels by the appropriate deadlines. You will receive a W for withdrawing. Failing to do so will result in an E grade for the course. If at the time you withdraw from the course you are scoring a failing grade, you will receive an E grade.

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact the instructor as soon as possible to discuss. Generally, modifications will be made where medically necessary.

Disclaimer

This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change. I have the right to institute new policies during the semester to ensure safety and a positive learning environment for all students.