Geography 1900: Extreme Weather and Climate
Autumn 2024 (4 credits)

Instructor Information
Instructor: Emily Mazan
Email: mazan.4@buckeyemail.osu.edu
Office: Derby Hall (DB) **1070**
Office Hours: Mondays & Wednesdays 1-2 PM; OR by appointment.

Lab Instructor: Oluwadamilola (Dammy) Salau
Office*:* DB **1155
Email: salau.2@buckeyemail.osu.edu
Office Hours: Thursdays from 11:00 AM to 1:00 PM; OR by appointment.

Course Grader: Aleshly Castro
Email: castro.200@buckeyemail.osu.edu

Note: Please contact instructors through email rather than Carmen to guarantee your message is received and will be answered in a timely manner.

Course Details

Lecture: Monday, Wednesday and Friday, 10:20 AM to 11:15 AM – Hagerty Hall 180

Labs: Monday 11:30 AM– 12:50 PM in Derby Hall (DB) 0070

Monday 2:20– 3:40 PM in Derby Hall (DB) 0070

Wednesday 11:30 AM– 12:50 PM in Derby Hall (DB) 0070

Wednesday 2:20– 3:40 PM in Derby Hall (DB) 0070

Note: In place of in-person lectures on **Wednesday September 6th, Friday September 8th, and Monday September 9th,** students must watch the pre-recorded lectures posted to Carmen and answer a short quiz. <u>On these dates, students will have from 9am to 11:30am (2.5 hours) to watch the video and complete the quiz.</u> Intended to be completed during the lecture period, videos will be less than 55 minutes long and quizzes will be comprised of 2-4 questions. Quizzes will count towards students' attendance/participation grades (in TopHat). TA Dammy will hold regular office hours during this time.

Students should check Carmen on Tuesday, September 10th for an announcement determining if

we will meet in person or continue the video lectures for **Wednesday, September 11th and Friday September 13th**. Information regarding office hours for these dates will be posted on Carmen. In-person lectures will resume on Monday, September 16th if not sooner.

Course Materials

Text: Aguado, E. and J. E. Burt, 2012. *Understanding Weather and Climate*, 7th edition. Pearson Education, Inc. Upper Saddle River, NJ. (ISBN: 9780321769633) *(Recommended)*

Lab Manual: PDF available for download on Carmen *(Required)*

Website: The Carmen course management system http://carmen.osu.edu

Course Description

This course will serve as an introduction to the study of the atmosphere. The primary objective is to provide students with a comprehensive understanding of the atmosphere and the processes that govern its behavior. Students will be exposed to various aspects of meteorology, including the atmosphere's structure and behavior, global energy balance and transfer, atmospheric circulation, precipitation processes, weather systems and severe weather. This course will emphasize the inter-relationship existing between the atmosphere, hydrosphere, biosphere and lithosphere and will illustrate how the movement of matter and energy between these spheres is responsible for the weather, climate and environments we experience on Earth.

Science GEC Course

Natural Science coursework fosters students' understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world. Below are the four general Natural Science GE outcomes and how each will be addressed by the course.

1. Students understand the basic facts, principles, theories and methods of modern science.
   a. Lectures, textbook and exams for basic facts, principles and theories

  b. Labs will demonstrate and give hands on experience with basic methods and reinforce understanding of principles with experiments.

2. Students learn key events in the history of science.

  a. Progressive understanding of atmospheric dynamics will be explained using key examples like mid-latitude cyclones.

  b. Basic history of meteorology and history of our understanding of anthropogenic climate change is explicitly covered by lectures.

3. Students provide examples of the inter-dependence of scientific and technological developments.

  a. Lab exercises will reinforce how technology infuses understanding, and how instrumentation to measure atmospheric phenomena has changed over time.

  b. Measurements of the atmosphere, its qualities and motions are key to atmospheric science, and lectures and readings will highlight specific examples of how technology has enhanced theoretical understanding, and vice versa.

4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

  a. In lectures and readings about climate change, ozone destruction, and atmospheric pollution students will engage with the social implications of science discoveries and how these both mold and are molded by worldviews and political perspectives.

Student Evaluation

The objectives of the course will be accomplished through lectures, laboratory assignments, and examinations. The lectures will include some material not covered in the textbook and may

incorporate math to the level of algebra. Determination of your grade will be as follows:

	% of total course grade
Attendance	5
Participation	5
Labs	30
Midterm 1	20
Midterm 2	20
Final Exam	20

Attendance (5%)

Students are required to attend all lectures and lab periods. Each student is entitled to one unjustified absence during the semester. Participation will be recorded using TopHat. It is the student's responsibility to make sure their device is communicating correctly with TopHat. Absences, including illness and University sponsored events require appropriate documentation to be considered "excused" and not count against the attendance grade. Such circumstances should be communicated to the instructors prior to class time whenever possible.

Participation (5%)

TopHat Multiple Choice Questions (5%) of the total course grade will be determined by student response to multiple choice questions via TopHat. Just answering the question, even if incorrectly, is all that is required for full participation points. It is the student's responsibility to make sure their device is communicating correctly with TopHat.

Labs (30%)

Laboratory exercises will be conducted during recitations. Attendance is required to receive credit for the lab assignment. Students should read through each lab and be prepared **PRIOR**

to the lab session. It is the responsibility of each student to turn in the required laboratory exercise at the beginning of the lab period on the due date. Although students are encouraged to work in groups, all lab exercises must be completed **INDIVIDUALLY** and answers must be the students' own work.

While the instructor will be happy to help with specific lab questions, the TAs might grade things differently depending on what took place during a particular lab. It is always safer to settle lab doubts with TAs. Students should also approach the TAs when it comes to arrangements on late or missed labs.

Exams (60%)

There will be three exams, two midterms and one final. All three will be online (Carmen) and open book. The open book policy allows students to use course materials, but they may not collaborate with any individual other than the instructor on the exam. Exams will consist of approximately 50 questions including ~35 multiple choice and ~15 true or false. Exams duration is 90 minutes. Exams are mostly non-cumulative but questions about some important themes/concepts will be present in both exams. These themes/concepts will be clearly communicated to the class by a study guide prior to exams. All exams are to be completed on Carmen during the following exam periods:

Exam 1: Friday, Sep 20 between 6:00 AM and 11:59 PM

Exam 2: Friday, Oct 25 between 6:00 AM and 11:59 PM

Final Exam: Tuesday, Dec 10 between 6:00 AM and 11:59 PM

Regular lectures and labs will take place on exam days unless otherwise indicated by the instructor.

Students will be able to start taking these exams at any time during the periods described above, but once they start, they will have only 90 minutes to finish. To make use of all 90 minutes, students need to start taking the exams at or before 10:29 PM of the day the exam is due. If a student starts to take Midterm Exam 1 at 11:54 PM on Sep 29, they will only have five (5) minutes to answer all 50 questions before they get locked out of the exam by Carmen. If this

takes place students will not have a second chance to answer any questions left blank.

Make-up exams are only allowed in the case of university sanctioned absences, a documented emergency or through **PRIOR** consent of the instructor.

The course adopts the following numerical-to-letter grade conversion:

Numerical Final Course Grade	Letter Final Course Grade
92.5-100	A
89.5-92.4	A-
86.5-89.4	B+
82.5-86.4	B
79.5-82.4	B-
76.5-79.4	C+
72.5-76.4	C
69.5-72.4	C-
66.5-69.4	D+
59.5-66.4	D
0-59.4	E

Final course numerical grades will be rounded to the closest decimal value before conversion to a letter grade. Unless an error in grade calculation is noted, no other adjustments will be made. For example: A student obtaining a final course numerical grade of 89.45 will have their grade rounded to 89.5 and will have earned an A- as final course letter grade. A student obtaining a final course numerical grade of 89.44 will have their grade rounded to 89.4 and will have earned a B+ as final course letter grade.

A note on the overall grades as seen on Carmen:

Due to a lack of connectivity between TopHat and Carmen and complications related to inserting extra credit grades on Carmen *the overall course grade students see on Carmen IS NOT CORRECT* and is usually an overestimate of the correct overall grade. An excel spreadsheet is available on

Carmen to aid students interested in tracking their overall grade during the semester. When adding attendance data to the spreadsheet students should use information obtained directly on TopHat and not the attendance percentages seen on Carmen.

Extra Credit

Three distinct activities will provide students with the opportunity of earning up to 4.5 extra points on their final course grade. There will be zero tolerance for late, incomplete, or incorrectly formatted extra credit submissions.

Syllabus Test

There is the potential for 0.5 extra credit point on the final course grade for those who turn in a perfect syllabus test. The test is available on Carmen and should be submitted online via Carmen by the end of the day (11:59 PM) on Wednesday, Aug 21. There will be no partial grades. To get the 0.5 extra credit point all responses must be correct. One error = no extra credit.

The 1900 Weather Creative

Create and submit a piece of art in some way related to weather and climate or other content discussed in class for up to 2 extra credit points on the final course grade. The effort can be individual or shared by up to two students. A variety of forms will be accepted, including but not limited to: poetry, music, short text, photography, painting/drawing, sculpture, animation, film, dance, short theatrical sketch and video games.

Important limitations:

- All submissions should be original efforts.

- Submissions are due on Monday, December 2.

- A representation of the piece must be uploaded to Carmen. This is simple for text or static images, but those who opt for performance (dance, theater), film, animation, song, etc… will have to record their work in some electronic format that can be

uploaded.

- All submissions should have a maximum duration of two and a half minutes, or 150 seconds. This includes poetry and text (the average person talks at about 125-150 words per minute).

While connections might be somewhat indirect, submissions must be related to the subject of the course. You are required to attach a short (max 100 words) legend explaining the connection. The instructor will reject submissions deemed not sufficiently related to the themes discussed in class.

Submissions will be curated and, if there is sufficient quantity and quality, we will hold a show with the best entries during one of the lecture periods in December. At this time the class will vote on their favorite submissions.

Citizen science cloud observations

In this individual effort, up to 2 extra credit points on the final course grade will be awarded to students who act as observers for the "Student Cloud Observations Online (S'COOL)" project. This is a NASA led citizen science initiative aimed at collecting cloud cover data in order to improve satellite-based observations. The amount of extra credit received will be determined by the total number of reports handed in. Each report is worth 0.08 points. These are accumulated until 2 extra credit points are obtained (25 reports). Students are encouraged to perform more than 25 observations, but those who do will still receive the maximum 2 extra credit points. To be valid, reports must be based on observations performed between Aug 21 and Dec 2. For full credit, reports must be submitted to Carmen by 11:59 PM on Dec 2. More details on how to perform observations and complete reports are found on the Extra Credit section in Carmen.

Academic Misconduct

The Committee on Academic Misconduct is responsible for investigating or establishing procedures for all reported cases of student academic misconduct. The term "academic

misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations and assignments. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct webpage: https://oaa.osu.edu/academic-integrity-and-misconduct

Use of generative AI (e.g., ChatGPT): OSU is well aware that generative artificial intelligence (AI) technologies are available and have published about implications for student misconduct: https://oaa.osu.edu/academic-integrity-and-misconduct. Use of generative AI in this class is not necessary and discouraged. Using AI exposes students to potential pitfalls of plagiarism and shortcuts (students cheat themselves) the learning process. The simplest way to be acting with academic integrity is to NOT use it. Students must answer lab questions in their own words and are otherwise in violation of the code of misconduct.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources. If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.

Disability Services

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including

mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. You are also welcome to register with Student Life Disability Services to establish reasonable accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you find yourself feeling isolated, anxious or overwhelmed, please know that there are resources to help: ccs.osu.edu. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at https://it.osu.edu/offerings/ohio-state-app-suite#ohio-state-wellness-app

Lecture Schedule*

Lecture**	Chapter	Theme
1	1	Atmosphere Composition
2	1/2	Comp. of the Atm./Radiation
3	2	Radiation in the Atmosphere
4	2/3	Seasons/Energy Balance
5	3	Temperature
6	4	Pressure and Wind
	Sept 20	**First Exam**
7	4/5	Pressure and Wind /Moisture
8	5/6	Moisture / Cloud Formation
9	7	Precipitation Processes
10	8	Atmospheric Circulation
11	8/9	Air Masses and Fronts
	Oct 25	**Second Exam**
12	10	Mid Latitude Cyclones
13	11	Tornadoes
14	12	Tropical Cyclones
15	15/16	Climate and Climate Change
16	15/16	Climate and Climate Change
17	14	Atmospheric Pollution
	Dec 10	**Final**

*This is a tentative schedule. <u>While exam dates will not change</u>, the material presented in lectures at the time of any exam might not mirror the schedule precisely. The material covered in each exam will be clearly defined on a study guide published on Carmen.