

GEOGRAPHY 1900
Extreme Weather and Climate
Spring Semester 2017

Instructor: Alvaro Montenegro

Office: 1152 Derby Hall (DB)

Phone: 688-5451

Email: montenegro.8@osu.edu - preferred

Office Hours: Thursdays, 3:00 - 5:00 PM **OR by appointment**

Teaching Assistant: Jerry Zou

Office: Derby Hall (DB) 1155

Email: zou.219@buckeyemail.osu.edu -preferred

Phone: 292-2704

Office Hours: Tuesdays, 3:00 - 5:00 PM **OR by appointment**

Course Details

Lecture: Tuesday and Thursday, 5:30-6:50 PM, Scot Lab E125

Labs: 18760 - Tuesday, 7:05-8:55 PM in Derby Hall (DB) 0070

18761 - Thursday, 7:05-8:55 PM in Derby Hall (DB) 0070

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) **(Suggested)**

Lab Manual: Course packet distributed by UniPrint at <http://uniprint.osu.edu>, available at OSU Bookstores (at Central Classroom and South Campus Gateway Barnes & Noble) **(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. In this course students will be exposed to various aspects of meteorology, including the structure and behavior of the atmosphere, 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

Participation: Participation will be based on lecture attendance. Each student is entitled to one unjustified absence during the semester.

Labs: Laboratory exercises will be conducted during recitations. Attendance is required. 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 class on the due date. All lab exercises must be completed **INDIVIDUALLY**, although working in groups is encouraged.

Exams: There will be three equally weighted exams. Exams, including the final, are mostly non-cumulative but questions about some important themes/concepts will be present in more than one exam. These themes/concepts will be clearly communicated to the class prior to exams. Make-up exams are only allowed in the event of a documented emergency or through **PRIOR** consent of the instructor. All exams will take place at the regular lecture room. Midterm exams occur during regular lecture hours and the final exam will take place in the regular lecture room on Friday, April 28 from 8:00 to 9:45 PM. All exams, including the final, will consist of multiple choice questions.

Final grade determined as follows:

Participation:	10%
Lab:	30%
Midterm Exam 1:	20% (Feb 7)
Midterm Exam 2:	20% (Mar 9)
Final Exam:	20% (Apr 24)

Extra Credit

Two distinct activities will provide students with the opportunity of earning up to 5 extra points on their final course grade.

Syllabus test: There is the potential for 1 extra credit point on the final course grade for those who turn in a perfect syllabus test. The test is available on Carmen and a paper copy is due at the end of the lecture on Tuesday, January 24. There will be no partial grades. To get the 1 extra credit point all responses must be correct. One error = no extra credit. Even those that hand in a perfect syllabus test can lose the 1 point at any time during the semester if they ask one of the instructors a question that could be answered with information present on the syllabus.

Citizen science cloud observations: In this individual effort, up to 4 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 0.125 points. These are accumulated until 4 extra credit points are obtained (32 reports). Students are encouraged to perform more than 32 observations, but those who do will still receive the maximum 4 extra credit points. Only reports that are completely filled will count for the extra credit. If you hand in 32 partially filled reports you will get no extra credit points. To be valid, reports must be based on observations performed between Jan 11 and Apr 19. More details on how to perform observations and complete reports are can be found on the Extra Credit section in Carmen.

Special Statement Regarding Absences

Based on the Office of the Provost recommendations on the current flu situation, students that feel ill are encouraged to stay home and isolate themselves from others. In addition, the “Explanatory Statement for Absence from Class” self-reporting form available online (<http://shc.osu.edu/posts/documents/absence-excuse-form.pdf>) from the Wilce Student Health Center will be accepted as documentation of medical absence and reasonable efforts will be made to provide for make-up work opportunities. All make-ups from documented absences must be **completed within one week** of the original scheduled date.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of 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. 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 (http://studentaffairs.osu.edu/resource_csc.asp).

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

Lecture Schedule*

Lecture**	Chapter	Theme
1	1	Composition of the Atmosphere
2	1/2	Comp. of the Atm./Radiation
3	2	Radiation in the Atmosphere
4	2/3	Seasons/Energy Balance
5	3	Temperature
February 7		First Exam
6	4	Pressure and Wind
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
March 9		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
April 28		Final - 8:00 - 9:45 PM

*This is a tentative schedule. While exam dates will not change, the actual 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 and communicated to the class by the instructor.

**Lecture here means a cohesive presentation covering a whole theme, not an 80-minute class.