

GEOGRAPHY 1900
Extreme Weather and Climate
Fall Semester 2016

Instructor: Jim DeGrand

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Office Hours: Mondays and Wednesdays, 1:00-2:00 PM OR **by appointment**

Teaching Assistants:

Jerry Zou

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Phone: 292-2704

Office Hours: Wednesdays, 3-5 pm OR **by appointment**

Course Details

Lecture: Tuesday, Thursday, 5:30 PM to 6:50 PM Page Hall (PA) 020

Labs:

Section 201 (15868) - Tuesday, 7:05 – 8:25 PM in Derby Hall (DB) 0070 (Jerry Zou)

Section 202 (15869) - Thursday, 7:05 – 8:25 PM in Derby Hall (DB) 0070 (Jerry Zou)

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) (**Strongly 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 of this course 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.

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
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.

Student Evaluation

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

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 class on the due date. All lab exercises must be completed **INDIVIDUALLY**, although working in groups is encouraged.

Exams: There will be three exams (two midterms and a final). Material presented in lecture and/or lab is fair game for the exams. Exams, including the final, are mostly non-cumulative but questions about some important themes/concepts will 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 Wednesday, December 14, from 8:00 to 9:45 PM.

Final grade determined as follows:

Participation:	10%
Lab:	30%
Midterm Exam 1:	20%
Midterm Exam 2:	20%
Final Exam:	20%

Extra Credit

Normally I don't offer extra credit in courses I teach. I will make an exception in this course for students who regularly participate in atmospheric science related citizen science programs throughout the semester. I am prepared to award up to 10% of total points to students who participate in approved (by me) programs. Extra credit points awarded will be pro-rated by student participation in the program. For example, a student who participates regularly in a program for 9 of the 18 weeks in the semester would receive an extra 5% of the total points

available in the course added to their final score. Two programs that I would be willing to give credit for are:

1. “CoCoRaHS”: The Community Collaborative Rain, Hail and Snow network (www.cocorahs.org). In this program volunteers setup a rain gauge on their property and post daily observations of precipitation receipts.
2. “S’Cool”: Students’ Cloud Observations On-line (<http://scool.larc.nasa.gov/>). In this project volunteers make daily observations of clouds which are timed to coincide with overflights of the NASA CERES (Clouds and the Earth’s Radiant Energy System) instrument. The observations are uploaded to a NASA website and are used in ground truthing and validation of the satellite based estimations of cloud type and cloud coverage.

There are probably other programs I would consider if they are related to atmospheric science and require regular volunteer participation. However, under no circumstances will I award extra credit for participation in a program without my prior approval of the program.

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

Students with disabilities that have been certified by the Office for Disability Services (150 Pomerene Hall, telephone 292-3307, TDD 292-0901) will be appropriately accommodated, and should inform the instructor of their needs at the **beginning of the term.**

Schedule*

Week	Dates	Topic	Readings
1	23-Aug	25-Aug Atmospheric composition	Chap 1
2	30-Aug	1-Sep Energy, Radiation and Seasons	Chap 2
3	6-Sep	8-Sep Energy Balance, Temperature	Chap 3
4	13-Sep	15-Sep Pressure and Wind	Chap 4
5	20-Sep	22-Sep Review, Exam I	
6	27-Sep	29-Sep Atmospheric Moisture	Chap 5
7	4-Oct	6-Oct Cloud formation, Precipitation	Chap 6, 7
8	11-Oct	Atmospheric Circulation	Chap 8
9	18-Oct	20-Oct Air Masses and Fronts	Chap 9
12	25-Oct	27-Oct Review, Exam II	
13	1-Nov	3-Nov Midlatitude Cyclones	Chap 10

14	8-Nov	10-Nov	Severe thunderstorms	Chap 11
15	15-Nov	17-Nov	Tropical Storms, Hurricanes	Chap 12
16	22-Nov		Climate and Climate Change	Chap 15, 16
17	29-Nov	1-Dec	Air Pollution	Chap 14
18	6-Dec		Review	
19	<u>14-Dec</u>		Final Exam	

*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.