Geography 1900
Extreme Weather and Climate
Summer 8 Week Session 1 (Class #21019)

Lecturer and Laboratory Instructor: Dan D'Amico, Ph.D. Candidate
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Course Details

Lecture: Monday, Wednesday, and Friday 9:50-11:25 AM, Hopkins Hall (HC) 250
Lab: 21020, Monday 12:00-1:35 PM, Derby Hall (DB) 0070

Course Materials

Text: Aguado, E. and J. E. Burt, 2014: *Understanding Weather and Climate*. 7th ed., Pearson Education, Inc., 600 pp, ISBN: 978-0321987303. (***Suggested, not required***)

Lab Manual: Course packet distributed by UniPrint at uniprint.osu.edu, available at OSU Bookstores (Central Campus and South Campus Gateway) (***Required***)

Website: The class will be updated on the Carmen course management system, 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.

Goals for Natural Science GEC Course

This course meets General Education (GE) requirements in one area – Natural Science, Physical Science. Specifically, this means we aspire to the following goals:

Students understand 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.

The expected learning outcomes include:

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

We will meet these goals and address the four outcomes as follows:

1. ***Students understand the basic facts, principles, theories and methods of modern science.*** With a combination of lectures, textbook readings, and quizzes reinforced by exams, students will comprehend the basic facts, principles and theories about our atmosphere, and its dynamics. The labs will demonstrate and give hands on experience with basic methods, and use experimental methods of modern science to reinforce understanding of principles relevant to atmospheric phenomena.
2. ***Students learn key events in the history of science.*** A basic history of meteorology and history of climate change is explicitly covered in lecture This course will describe how the understanding of atmospheric dynamics has progressed over time, and we will use key concepts like mid-latitude cyclones to illustrate the influence of social historical events on basic terminology (e.g. moving fronts like World War military maps).
3. ***Students provide examples of the inter-dependence of scientific and technological developments.*** Measurements of the atmosphere, its qualities, and its motion have been crucial to the development of atmospheric sciences, and class lectures and readings will highlight specific examples of how technology has enhanced theoretical understanding, and how better theory has improved technology. Lab exercises will reinforce how technology infuses understanding, and provide hands-on demonstrations of how to measure atmospheric phenomena with technology, and how that technology has changed over time.
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.*** In lectures and readings of climate change, ozone destruction, and atmospheric pollution students will engage with the social implications of science discoveries in understanding the potential of technology role of worldviews and political perspectives influence.

Student Evaluation

Participation: Attendance in the lecture is of great importance to student success in this course. Lecture slides will be posted for student reference, but attendance is still very important for the exams. Because of this, participation will be evaluated nearly every class, using TopHat software (entirely participation) and paper pop quizzes (participation and content based). One TopHat assignment and the lowest paper quiz grade will be dropped.

Labs: Laboratory exercises will be conducted during the laboratory period. Attendance is required. Students should read through each lab and be prepared for the weeks laboratory assignment(s) **PRIOR** to the lab session. It will be the responsibility of each student to turn in the required laboratory exercise(s) 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). Materials presented in lecture and/or lab are fair game for the exams. Exams (including the final) will be non-cumulative, but might contain questions about important themes from prior exams or topics. Make-up exams are only allowed in the event of a documented emergency or through **PRIOR** consent of the instructor. Both midterm exams take place in the normal lecture room at the normal lecture time. The final exam will take place on the last lecture day (June 30) in the normal lecture room at the normal lecture time. Exam formats will vary.

Final grade will be determined as follows:

Participation:	**12%**
Laboratory:	**30%**
Midterm Exam 1:	**19%**
Midterm Exam 2:	**19%**
Final Exam:	**20%**

Extra Credit: There will be at least one opportunity for extra credit and the potential for another extra credit assignment later in the term. The first is a **Syllabus Quiz**. The quiz is available on Carmen and a paper copy is due at the end of lecture on Wednesday, May 17. This quiz will be worth 1% extra credit on your final grade. To earn the extra 1%, all responses must be correct. One error = no extra credit. Even those that hand in a perfect syllabus quiz can lose the extra credit during the semester if they ask a question that could be answered with information present on the syllabus. Any other potential extra credit will be announced later in the semester. Bonus items will also exist on some quizzes and exams, both of which can exceed 100%.

Classroom Etiquette

Please arrive to both lecture and laboratory sessions on time. While eating and drinking are permitted, please keep these activities to a minimum, so as to not disturb other students. Talking during lectures and prelab exercises should also be limited. Anyone surfing the web or using cell phones to make/receive calls or text messages during class will be asked to leave.

E-Mail Etiquette

I have four expectations for when you e-mail me: 1) *You must use your OSU e-mail address* (the OSU spam filter may not accept other e-mail communications); 2) *Identify yourself at the beginning of the message*, 3) *Identify the class* ("This is Brutus Buckeye, from your GEOG 2960 class); and 4) *Make certain that you write in a clear, direct manner*. This should be a professional message, not an informal message. I will do my best to respond to your e-mail within 24 hours.

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 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.

Disability Services

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901.

Tentative Schedule*

Week	Day	Date	Special	Topic	Lecture**	Lab
1	W	10-May		Energy and Mass	1. Atmos Composition and Structure 2. Solar Radiation and Heat Transfer 3. The Seasons and Energy Balance 4. Temperature 5. Atmospheric Pressure and Winds	No Lab
	F	12-May				
2	M	15-May				Labs 1 & 8
	W	17-May				
	F	19-May				
3	M	22-May				Lab 2
	W	24-May	**Exam 1**	**Exam 1**		
	F	26-May		Water in the Atmosphere	6. Atmospheric Moisture 7. Atmospheric Stability and Clouds 8. Precipitation 9. Global Circulation 10. Local Winds and ENSO 11. Air Masses and Fronts	
4	M	29-May	Memorial Day			No Lab
	W	31-May				
	F	2-Jun				
5	M	5-Jun				Labs 3 & 4
	W	7-Jun		Distribution and Movement of Air		
	F	9-Jun				
6	M	12-Jun				Lab 5
	W	14-Jun	**Exam 2**	**Exam 2**		
	F	16-Jun		Atmospheric Disturbances	12. Mid-latitude Cyclones 13. Thunderstorms and Tornadoes 14. Tropical Cyclones 15. Human Impacts 16. Climate Change	
7	M	19-Jun				Labs 6 & 7
	W	21-Jun				
	F	23-Jun				
8	M	26-Jun		Human Impacts		Lab 9
	W	28-Jun				
	F	30-Jun	**Final Exam**	**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.

**Lecture here means a cohesive presentation covering a whole theme, not a 95-minute class. Lectures may span more than one lecture period and we may cover more than one lecture theme in one lecture period.