

EARS 14 – Meteorology Fall 2018

Instructor: Erich Osterberg, 205 Fairchild Hall, 646-1096,
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Graduate TA: Katie Anderson, 218 Fairchild Hall

Meeting Times: Lecture: Tues, Thurs, 10:10-12:00 pm (10A)
Lab: Wed 3-5 pm

Office Hours: **Erich:** TBD
Katie: TBD

Class Web Site: Course on Canvas

Required Text: *The Atmosphere: An Introduction to Meteorology, 13th edition*, by Lutgens, Tarbuck, and Tasa (Prentice Hall)

Course Objectives: Weather is a fundamental part of our lives, affecting everything that we do outdoors, and severe weather has a significant impact on human health and infrastructure. We have entire television channels devoted to it (the true measure of importance in modern society)! This course will introduce you to the science of weather and the atmosphere, focusing on understanding weather on a day-to-day basis through observations, and on the collection and analysis of meteorological data. We will begin with first principles of atmospheric composition, the Earth's heat engine, and fundamental atmospheric properties like temperature and moisture. These will lead to more in-depth discussions of atmospheric circulation (wind and air masses), weather patterns, weather forecasting, extreme weather events like thunderstorms, hurricanes and tornadoes, and how weather is related to Earth's changing climate.

In addition to learning these core concepts, my objectives are to:

1. Enhance your ability to obtain, analyze, and interpret scientific data;
2. Improve your ability to communicate these data and results;
3. Increase your familiarity with the general process of science.

Field Trip: I would like to take an *optional* field trip to the Mt. Washington observatory to see a professional meteorological station. This would probably have to be a Sunday – let me know if you are interested and would be available on a Sunday in September or early October.

Course Requirements and Grading:

Labs (40% of grade): There will be 7 different lab assignments during the term. You will have ~1 week to complete each report. The last lab write-up (Lab #7) will be based on data you acquire from a region of your interest and will be weighted twice as much (10%) as other labs (5% each) to reflect the larger time commitment.

Class Quizzes (10% of grade): There will be 3 short, in-class quizzes during the term. These will be based entirely on the required reading and lectures. I will drop the lowest quiz grade.

Questions and Presentations (10% of grade): You will make 1 short (~10-15 min) presentation discussing the week's weather and forecast. We will also have interactive questions and small activities during class which will contribute to your participation grade.

Midterm Exam (20% of grade): This will be a midterm exam **scheduled on Wednesday October 17th during lab period (time subject to adjustment).**

Final Exam (20% of grade): The final exam covers material in the 2nd half of the course, and is **currently scheduled for Monday, November 19 at 3:00 pm.**

Planned Absences during Quizzes or Exams: If you know ahead of time that you will be absent from a quiz or exam (e.g. for a college-affiliated extra-curricular activity, job interview, etc.), speak with me about it **as soon as you know** so that accommodations can be made. In general, my policy is to allow students to take exams and quizzes **early** for a planned absence, but not to take it late unless there are special circumstances.

Late Lab Assignments: Lab assignments are **due at 3 PM** on the due date. You should turn in your assignments in the EARS 14 drop box on the second floor of Fairchild Hall, or you can hand them to me at the start of lab period. 5% will be deducted for each day that an assignment is late, unless you discuss the situation with me **prior** to the original due date. For example, an assignment due on Wednesday would be deducted 5% if turned in between 5 PM Wednesday and 5 PM Thursday, and 10% if turned in between 5 PM Thursday and 5 PM Friday, etc. If you are unable to complete an assignment on time due to illness or other personal reasons, you may be eligible to have this penalty waived. You are encouraged to talk to me **as soon as possible**, and if necessary, meet with your Dean to discuss your situation.

Disability-Related Accommodations: Students with disabilities enrolled in this course and who may need disability-related academic adjustments and services are encouraged to see Erich privately as early as possible in the term. Students requiring disability-related academic adjustments and services **MUST** consult the Student Accessibility Services office (301 Collis Student Center, 646-9900, student.accessibility.services@dartmouth.edu). Once SAS has authorized services, students must show the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to Erich. As a first step, if students have questions about

whether they qualify to receive academic adjustments and services, they should contact the SAS office. All inquiries and discussions will remain confidential.

Religious Observances: If you have a religious observance that conflicts with your participation in this course, please meet with Erich **as early as possible** to discuss accommodations.

Academic Honor Principle: You should be aware of and conform to the Dartmouth Honor Principle as expressed in the ORC. Suspected Honor Principle Violations will be reported to the Dartmouth Committee on Standards (COS).

For this course, specifically be aware of the following:

- ***Quizzes and Exams:*** All work on quizzes and exams is your own. **Referring to a prior year's corrected quiz or exam is an Honor Principle Violation.**
- ***Labs:*** You are welcome to discuss lab assignments in groups, but what you turn in must be written in your own words. **Referring to a prior year's corrected lab assignment, even if different from this year's assignment, is an Honor Principle Violation.**
- ***Plagiarism:*** Be sure to cite all references in lab assignments.
- If you are unsure, please ask a TA or me how the Honor Principle applies to this course.

Tentative Schedule (Updated 9/2/18)

Date	Lecture/Lab Topic	Reading	Assignment
9/13 (Th)	Course Introduction	Ch. 1	
9/18 (T)	Atmospheric structure and heating	Ch. 2	
9/19 (W)	Lab 1: Vertical Structure/Earth-Sun Geometry		
9/20 (Th)	Solar heating and temperature	Ch. 3	
9/25 (T)	Temperature Controls	Ch. 3	
9/26 (W)	Lab 2: Global energy budget, Hanover temp		Lab 1 due
9/27 (Th)	Moisture and Atmospheric Stability	Ch. 4	Quiz #1
10/2 (T)	Condensation and Precipitation	Ch. 5	
10/3 (W)	Lab 3: Moisture and precipitation		Lab 2 due
10/4 (Th)	Winds and Pressure	Ch. 6	
10/9 (T)	Atmospheric Circulation	Ch. 7	
10/10 (W)	Lab 4: Atmospheric motion		Lab 3 due
10/11 (Th)	Air Masses and Fronts	Ch. 8	Quiz #2
10/16(T)	Weather patterns I & Midterm Review	Ch. 9	
10/17 (W)	MIDTERM EXAM	Ch. 1-8	Lab 4 due
10/18 (Th)	Weather patterns II	Ch. 9	
10/23 (T)	Thunderstorms and Tornados	Ch. 10	
10/24 (W)	Lab 5: Tornados		
10/25 (Th)	Tropical Storms and Hurricanes	Ch. 11	
10/30 (T)	Weather Forecasting	Ch. 12	
10/31 (W)	Lab 6: Hurricanes		Lab 5 due
11/1 (Th)	Air Pollution	Ch. 13	Quiz #3
11/6 (T)	Weather Forecasting - VOTE!	Ch. 12	
11/7 (W)	Lab 7: Local climate and change		Lab 6 due
11/8 (Th)	Climate Change and Weather I	Ch. 14	
11/12 (T)	Climate Change and Weather II	Ch. 14	
11/19 (Mon)	3:00 pm FINAL EXAM	Ch. 9-14	