

# METR 2603 – Severe and Unusual Weather

## Spring 2014

**Instructor:** Nathan Dahl (dahl\_nathan@ou.edu)

**Office:** Sarkey Energy Center, Room 410A

**Office Hours:** 2:30-4:30 pm Mondays and Wednesdays, or by appointment

**Course web page:** All information and materials will be posted on the class page on Desire2Learn, <https://learn.ou.edu> (log on using your OU 4+4)

**Required Materials:** *Severe and Hazardous Weather: An introduction to high impact meteorology* (4<sup>th</sup> edition) by Rauber, Walsh, and Charlevoix

### Course Grade Determination:

Class attendance/participation	5%
Homework assignments	35%
Writing assignment	10%
3 exams (15% each, one drop)	30%
Final exam	20%

Grade Cutoffs: **A** 87.5%, **B** 75%, **C** 62.5%, **D** 50%

**(Note: there will be no rounding. For example, an 87.499999% is still a B)**

**About the course:** METR 2603 is an overview of both the physical processes governing atmospheric behavior and the information and methods meteorologists use to study and predict severe and unusual weather. As such, while the course is not specifically designed to make you into a scientist, it is designed to equip you with a basic understanding of how the atmosphere works. Furthermore, it is designed to develop critical reasoning skills that will enable you to respond to severe weather situations and evaluate claims regarding weather and climate that you may encounter in conversations or through the media.

The lecture notes for a given session will be provided on Desire2Learn at least 48 hours prior to class, but it is *your responsibility* to print them out and bring them with you. These notes are designed so that you can follow along with (and participate in) the discussion during class while making brief notes in the margins where needed, instead of trying to transcribe the entire lecture as I give it. I will send out an e-mail (at least 24 hours in advance) giving a heads-up on which portion of the notes will be covered in the next class; it will then be *your responsibility* to review that portion of the notes *prior* to class, since I will

sometimes assign brief, simple, and unannounced quizzes at the beginning of class that will go toward your attendance/participation grade.

The course textbook is simply too large to cover in a one-semester course, and there will also be a few occasions where lectures will cover material not contained in the textbook. Therefore, you will only be responsible for the material explicitly emphasized in the lecture notes. However, the lectures will regularly refer to visual aids or explanations given in the textbook, and homework problems will regularly be assigned from it; also, the lecture notes and the textbook will often explain the same principles in slightly different ways in order to provide a resource for “cross-checking” topics that are not easily grasped during class. Therefore, it is very important to *BRING BOTH THE LECTURE NOTES AND THE TEXTBOOK TO CLASS*.

Finally, I urge you to ask questions freely during class and make liberal use of my office hours if you find the course material confusing. *DO NOT HESITATE*.

**Attendance Policy:** While I will make the notes as comprehensive as possible, missing class will also cause you to miss supplementary explanation that may prove vital to your understanding of the material. For instance, example problems will frequently be worked out during class, and these problems will often correspond closely to problems you can expect to see on homeworks and exams. It will be *your responsibility* to obtain any material you miss due to absence, either from fellow students or from me during office hours. **It is also your responsibility to see that your homework assignments are turned in by the end of the class period at which they are due; after that point, they will be penalized 10%, with a further 20% for every additional day that they are late.** The *only* exceptions will be made for serious medical emergencies requiring treatment, with documentation from the healthcare provider. Note: Since the class only meets twice a week, I will accept a scanned copy of your completed, *handwritten* assignment containing your name (sent via e-mail) without penalty at any point up to the end of class on the due date.

Quizzes can *not* be made up if you miss class, since they are meant to reflect attendance. For exams, since this is an evening class, if you are unable to attend an exam, I will require notice from you (via e-mail) **by noon on the day of the exam at the latest** in order to allow a make-up exam to be issued. If an

emergency arises at any time after that, I **will require documentation** (doctor's note, selfie from the scene of the accident, etc.) in order to offer a makeup exam; otherwise, that exam will count as your drop. Also, since the make-up exam will not ask the same questions as the regular exam, it might be slightly more difficult, although I will do my best to avoid this.

One more point: scheduling conflicts have arisen in the past due to daytime classes scheduling activities or exams in the evenings. **It is your responsibility to check with your other instructors to see if they plan to schedule anything that would conflict with this class, especially the exams, and then provide me with a copy of the schedule as documentation; the deadline for reporting such conflicts to me, so that I can change exam dates if necessary, is FRIDAY, JANUARY 24<sup>th</sup>.**

**Reasonable Accommodation:** The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodation in this course are requested to speak with me as early in the semester as possible. Students with disabilities **must** be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 325-3852 or TDD only 325-4173.

**Academic Misconduct:** All provisions of the Norman Campus Academic Misconduct Code shall apply in cases of academic dishonesty. Any violation of the Academic Misconduct Code will result in your removal from this course, and a grade of F will be recorded for the course. Academic misconduct is defined as "any act that improperly affects the evaluation of a student's academic performance or achievement." At the University of Oklahoma, academic integrity is expected from each student. Misconduct such as plagiarism, fabrication, and fraud, as well as attempting to commit such acts or assisting others in doing so, will not be tolerated. Students are responsible for knowing the OU Academic Conduct Code, which can be found at <http://www.ou.edu/studentcode> and <http://www.ou.edu/provost/integrity>

## Class Schedule

### JANUARY

- 14<sup>th</sup> Course Intro, Properties of the Atmosphere I (units, density, temperature)  
- **Homework 1 assigned**
- 16<sup>th</sup> Properties of the Atmosphere II (pressure, humidity, and wind)
- 21<sup>st</sup> Meteorological Maps and Charts I (time coordination, surface charts)  
- **Homework 1 due, Homework 2 assigned**
- 23<sup>rd</sup> Meteorological Maps and Charts II (upper-air charts, radar data)
- 28<sup>th</sup> Meteorological Maps and Charts III (satellite data, begin exam review)  
- **Homework 2 due**
- 30<sup>th</sup> Exam 1 Review

### FEBRUARY

- 4<sup>th</sup> **EXAM 1**
- 6<sup>th</sup> Heat, Forces, and Stability I (heat)  
- **Homework 3 assigned**
- 11<sup>th</sup> Heat, Forces, and Stability II (forces)
- 14<sup>th</sup> Heat, Forces, and Stability III (buoyancy and the concept of stability)
- 18<sup>th</sup> Global Climate I (the concept of climate, heat budget, seasons, global oscillations)  
- **Homework 3 due, Homework 4 assigned**  
- **Writing Assignment issued (due April 3<sup>rd</sup>)**
- 20<sup>th</sup> Global Climate II (the science and impacts of climate change)
- 27<sup>th</sup> Global Climate III (*Climate of Doubt*, “baloney detection,” begin exam review)  
- **Homework 4 Due**

### MARCH

- 4<sup>th</sup> Exam 2 Review
- 6<sup>th</sup> **EXAM 2**

- 8<sup>th</sup> Airmasses and Cyclones I (airmass types, cyclone formation and structure)  
- **Homework 5 assigned**
- 11<sup>th</sup> Airmasses and Cyclones II (regional development and evolution of U.S. cyclones)
- 13<sup>th</sup> Dry Air Phenomena  
- **Homework 5 due**
- 18<sup>th</sup> **SPRING BREAK**
- 20<sup>th</sup> **SPRING BREAK**
- 25<sup>th</sup> Winter Weather I (short course in cloud physics, snowstorms and blizzards)  
- **Homework 6 assigned**
- 27<sup>th</sup> Winter Weather II (other types of winter precipitation and their impacts, Homework 6)  
- **Homework 6 due**

APRIL

- 1<sup>st</sup> Exam 3 Review  
- **Writing Assignment due**
- 3<sup>rd</sup> **EXAM 3**
- 8<sup>th</sup> Thunderstorms I (single-cell storms, multi-cell storms, squall lines)  
- **Homework 7 assigned**
- 10<sup>th</sup> Thunderstorms II (lightning, downbursts, floods, hail)
- 15<sup>th</sup> Tropical Storms  
- **Homework 7 due, Homework 8 assigned**
- 17<sup>nd</sup> Supercells and Tornadoes I (supercell development, structure, and forecasting)
- 22<sup>th</sup> Supercells and Tornadoes II (tornado development and evolution, forecasting problems)
- 24<sup>th</sup> Supercells and Tornadoes III (public safety/response, events/video)  
**Homework 8 due**
- 29<sup>th</sup> Final Exam Review

MAY

- 1<sup>st</sup> **FINAL EXAM (during regular class period)**