METR 2603: Severe and Unusual Weather
Emphasis on Lightning Phenomena, Protection, and Safety

Purpose of the Course
The purposes of this course are simple and straightforward. In priority order, they are:

1. to provide you with an opportunity to experience a science course, thereby not only learning some science but also, and perhaps more importantly, gaining some insight as to how and why scientists do what they do,
2. to expose you to some basic concepts of physics and meteorology relevant to storms, especially those that produce lightning, and
3. to introduce you to the phenomena and basic physics of lightning as well as principles of lightning safety and protection that could save your life.

Course Description
This course provides an overview of the physical processes and meteorological conditions that lead to the formation of thunderstorms. This version of the course emphasizes the phenomena and descriptive physics of lightning and the basics of lightning protection and warning and safety. This course does not count for major credit in the School of Meteorology at the University of Oklahoma.

Required Text

This textbook is available free online through OU Libraries. Go to "How to Get Your Textbook" on the Modules page in Canvas for instructions.

Optional Text

Please note that although the 8th edition is cited here, you may use any edition of the Essentials of Meteorology text.

Course Topics
- Scientific Method, Vocabulary, Notation
- Basic Physics Concepts
- Overview of the Atmosphere
- Clouds, Precipitation, Thunderstorms
- Lightning Phenomena and Physics
- Lightning Warning and Safety
- Effects of Lightning on Living Things
- Lightning Protection
The first four topics will have notes and lectures provided online.

Material for the last four topics will come from the lectures and required text.

Course Grade
The course grade will be determined as follows:

- 7 quizzes: 50%
- Final Exam: 25%
- Term Paper: 25%

The quizzes and final exam will be open-book and open-notes.

Final Exam
The final exam will cover material in all 7 quizzes and is worth 25% of your final grade. You will be permitted to use your textbook and notes while taking your Final Exam. You are required to be proctored while taking the final exam, and information on proctoring can be found on the Student Help Page. Since this is a self-paced course and exams are proctored, there will be no need for make-up exams.

Term Paper
You will be required to write a scholarly paper with appropriate bibliographic references on a topic from a list that will be provided at the beginning of the course. Bibliographic references will be a very important component of the paper. (See the guidelines for the term paper.) The paper will count for 25% of your grade. To help you get going on the paper and to give you an opportunity to learn about bibliographic references, you will be required to submit an outline before submitting the term paper.

Academic Integrity
As a student taking a course at the University of Oklahoma, you are expected to uphold the academic integrity code. Please visit the Academic Integrity website and familiarize yourself with the standards you will be held to while taking your course.

Religious Observance
It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty. Since this is a self-paced course this should not be an issue.

Reasonable Accommodation Policy
Students requiring academic accommodation should contact the Disability Resource Center for assistance at (405) 325-3852 or TDD: (405) 325-4173. For more information, please see the Disability Resource Center website. Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.
Title IX Resources and Reporting Requirement
For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on call 24/7. To learn more or to report an incident, please contact the Sexual Misconduct Office at 405-325-2215 (8 to 5, M–F) or OU Advocates at 405-615-0013 (24/7). Also, please be advised that a professor/GA/TA is required to report instances of sexual harassment, sexual assault, or discrimination to the Sexual Misconduct Office. For more information, please visit the Institutional Equity Office website.

Course Plan for METR 2603

Unit 1: Scientific Method, Vocabulary, and Notation
1. Review and study the lectures for Unit 1.
2. Optional: Read Chapters 1–3 in Essentials of Meteorology.
4. Take the Self-Tests for the Unit 1 Study Guides.
5. Take Practice Quiz 1.
6. Take Quiz 1.

Unit 2: Basic Physics Concepts
1. Review and study the lectures for Unit 2.
2. Optional: Read Chapters 4 and 5 in Essentials of Meteorology.
3. Review Study Guides 4 and 5.
4. Take the Self-Tests for the Unit 2 Study Guides.
5. Take Practice Quiz 2.
6. Take Quiz 2.

Unit 3: Overview of the Atmosphere
1. Review and study the lectures for Unit 3.
2. Optional: Read Chapters 8 and 10 in Essentials of Meteorology.
4. Take the Self-Tests for the Unit 3 Study Guides.
5. Take Practice Quiz 3.
6. Take Quiz 3.
7. Submit your term paper outline.

Unit 4: Clouds, Precipitation, and Thunderstorms
1. Review and study the lectures for Unit 4.
2. Read Chapter 1, Sections 1.1–1.3, in The Art and Science of Lightning Protection.
4. Take Practice Quiz 4.
5. Take Quiz 4.
Unit 5: Lightning Phenomena and Physics
1. Review and study the lectures for Unit 5.
2. Read Chapter 1, Sections 1.4–1.5, and Chapters 2–5 in The Art and Science of Lightning Protection.
4. Take Practice Quiz 5.
5. Take Quiz 5.

Unit 6: Lightning Warning and Safety
1. Review and study the lectures for Unit 6.
2. Read Chapters 7 and 11 in The Art and Science of Lightning Protection.
4. Take Practice Quiz 6.
5. Take Quiz 6.

Unit 7: Effects of Lightning on Living Things
1. Review and study the lectures for Unit 7.
2. Read Chapters 8, 13, and 14 in The Art and Science of Lightning Protection.
4. Take Practice Quiz 7.
5. Take Quiz 7.

Term Paper
Submit your Term Paper before taking the Final Exam.

Final Exam
1. Schedule your final exam.
2. Take your final exam.