

**ATMOS 1010
Severe and Unusual Weather
Fall Semester 2016**

MW 11:50-1:10 (Lecture)
FASB 295

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Office Hours: MWF 10:00-10:30;
MW 1:15-1:45 or by appointment

1. Course Description:

Severe and Unusual Weather is a three-credit, introductory course in atmospheric sciences. The only prerequisite to this course is an interest in learning about the atmosphere in which we live and a willingness to participate in class discussions. This descriptive course requires only the most basic math skills and will use very few equations. The objective of this class is to develop an understanding of the fundamental laws of nature and apply them to the atmosphere. This course is not a weather forecasting course. We will follow the textbook closely as we explore a wide range of topics including clouds, precipitation, wind patterns, thunderstorms, tornadoes, hailstorms, lightning, downbursts, hurricanes, and lake effect snowstorms. During the study of these topics we will make use of the following basic scientific laws and concepts:

- The laws of thermodynamics and mechanics
- The structure of matter
- The interaction of matter and energy
- The behavior of the atmospheric system through time
- Systems of classification
- Physical processes in the atmospheric environment

Scientific knowledge continually evolves. Thus, we will focus on understanding the *scientific process* and developing *critical thinking skills* required to be a good consumer of scientific information.

ATMOS 1010 is a *concept* based course, not a fact based course. You will be expected to explain *why* and *how*, not just *what*. You will also be expected to apply your knowledge to solve or explain new processes or phenomena not explicitly covered during lectures.

This course builds upon itself. You must understand previous material before you will be able to understand new material. Consequently, if you do not attend class regularly or fall behind on the reading assignments, you will find this course very difficult. If you do fall behind, be sure to take advantage of the resources that are available to you (see **Student Expectations**).

ATMOS 1010 is a Physical/Life Sciences Intellectual Exploration (SF) course and adheres to university policies regarding course content.

2. Prerequisites: None

3. Required Textbook:

- Rauber, R.M., J. E. Walsh, and D. J. Charlevoix, Severe & Hazardous Weather: An Introduction to High Impact Meteorology (Fourth Edition), Kendall/Hunt Publishing Company, ISBN 978-0-7575-9772-5, 2012. [Note: e-Book edition of the textbook is acceptable as well as are the 2nd and 3rd editions.]

4. Other Useful References:

- <http://severewx.atmos.uiuc.edu> (Textbook Website)

5. Tentative Course Outline:

Class #	Date	Topics	Assigned Reading
1	8/22	Introduction, Class Overview/Policies, Chapter 1: Properties of the Atmosphere	Chapter 1 (1 st half)
2	8/24	Chapter 1: Properties of the Atmosphere	Chapter 1 (2 nd half)
3	8/29	Chapter 2: Meteorological Measurements	Chapter 2 (1 st half)
4	8/31	Chapter 2: Meteorological Measurements	Chapter 2 (2 nd half)
	9/5	***** University Holiday – No Class *****	
5	9/7	Chapter 2: Meteorological Measurements	
6	9/12	Chapter 5: Climate and Global Change	Chapter 5 (1 st half)
7	9/14	Chapter 5: Climate and Global Change	Chapter 5 (2 nd half)
8	9/19	Atmospheric Moisture/Cloud Types	Handout #1
9	9/21	Precipitation Formation	Handout #2
10	9/26	Exam #1 (Chapters 1, 2, 5)	
11	9/28	Chapter 6: Atmospheric Stability	Chapter 6 (1 st half)
12	10/3	Chapter 6: Atmospheric Stability	Chapter 6 (2 nd half)
13	10/5	Chapter 9: Airmasses and Fronts	Chapter 9
	10/10	***** Fall Break – No Class *****	
	10/12	***** Fall Break – No Class *****	
14	10/17	Introduction to Air Pollution	Handout #3
15	10/19	Introduction to Air Pollution	
16	10/24	Exam #2 (Atmospheric Moisture/Precipitation, Chapters 6, 9)	
17	10/26	Chapter 18: Thunderstorms	Chapter 18 (1 st half)
18	10/31	Chapter 18: Thunderstorms	Chapter 18 (2 nd half)
19	11/2	Chapter 19: Tornadoes	Chapter 19 (1 st half)
20	11/7	Chapter 19: Tornadoes	Chapter 19 (2 nd half)
21	11/9	Chapter 20: Hailstorms	Chapter 20
22	11/14	Chapter 21: Lightning	Chapter 21 (1 st half)
23	11/16	Chapter 21: Lightning	Chapter 21 (2 nd half)
24	11/21	Exam #3 (Chapters Air Pollution, 18, 19, 20)	
25	11/23	Chapter 22: Downbursts	Chapter 22
26	11/28	Chapter 13: Lake Effect Snowstorms	Chapter 13 (1 st half)
27	11/30	Chapter 13: Lake Effect Snowstorms	Chapter 13 (2 nd half)

28	12/5	Chapter 24: Tropical Cyclones	Chapter 24 (1 st half)
29	12/7	Chapter 24: Tropical Cyclones	Chapter 24 (2 nd half)
	12/13	Exam #4 (Chapters 13, 21, 22, 24) 10:30 a.m. - 12:30 p.m. in 295 FASB	

6. Grading:

Grades will be based upon your performance on the quizzes and exams. The weighted contribution of each of these items to your final grade is given below:

	Weight
Quizzes (based on the best 10 scores)	40%
Exam #1	15%
Exam #2	15%
Exam #3	15%
Exam #4	15%
	100%

Although there is no homework in this class, we will be completing active learning exercises during class that will help prepare you for the quizzes and exams. The main purpose for doing the active learning exercises is to help *YOU* learn the material. Thus, it is important for you to attend the class regularly so that you don't miss out on this important learning opportunity. Keep in mind that the TA and I are available during office hours or by appointment to assist you in learning the material, if necessary.

Final grades are based on the following scale:

Score	Grade
> 92.5%	A
90% - 92.5%	A-
87.5% - 90%	B+
82.5% - 87.5%	B
80% - 82.5%	B-
77.5% - 80%	C+

Score	Grade
72.5% - 77.5%	C
70% - 72.5%	C-
67.5% - 70%	D+
62.5% - 67.5%	D
60% - 62.5%	D-
<60%	E

Sometimes cutoff points are lowered to produce more natural break-points and a reasonable distribution of grades, but please don't count on it.

7. Student Expectations:

History shows that the following minimum behaviors are necessary to receive a "C" or better in this course:

- Timely attendance to all classes
- A minimum of six (6) hours of studying outside of class each week
- Regular office hour attendance
- Completion of all quizzes and exams
- Read pertinent material prior to class
- Seek help immediately when needed

Students that do not follow the above recommendations usually end up with an undesirable grade. While there is no guarantee that doing all of the above will result in a good grade, it certainly increases the probability. If you cannot fulfill the minimum expectations you should consider dropping this course. Remember that the above list should be considered the minimum required effort. Students that want an "A" or "B" generally must go the extra mile.

There is no excuse for not attending office hours. If you can't attend regular office hours, you should make an appointment. Once again, don't think everything is suddenly and magically going to start making sense to you. It won't. If you feel yourself getting lost, **GET HELP!** I will always work with students willing to put in the effort.

8. Other Class Policies:

Students must take every exam with exceptions governed by University Policy. Plagiarizing, copying, cheating or otherwise misrepresenting ones' work will not be tolerated and will be dealt with as harshly as permitted under University Policy.

Do not break the scientific code of honor.

I will not take attendance, but keep in mind that this course moves at a rapid pace. Missing just one class can result in a lack of understanding in future classes. In addition, some course material that you are responsible for will only be presented during lectures (i.e., will not be found in the textbook).

9. Use of Canvas:

This course depends on students using Canvas to access class content, submit assignments, participate in online discussions, etc. Students not familiar with Canvas are expected to complete the online tutorials, contact support at classhelp@utah.edu, or call 581-6112 immediately.

10. ADA Statement:

“The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.” (<http://www.hr.utah.edu/oeo/ada/guide/faculty/>)

Note: This syllabus is not a binding legal contract. It may be modified by the instructor when students are given reasonable notice of the modification.