Syllabus — Spring 2013

Class Schedule: MWF 9:30–10:20am, Carson Engineering Rm 117
Instructor: Dr. Daphne LaDue
Office Phone: 405-325-1898 **Email:** dzaras@ou.edu
Office Hours: Mondays 10:30a–noon, SEC 410. Alternate times possible! Please call or email to schedule. Be aware: my regular office is in the National Weather Center.
Grader: Derek Stratman

Content: Severe and Unusual Weather is a non-majors course that serves as a General Education Core II Natural Science Elective (non-lab). It is designed to provide students with an in-depth look at the physical and societal aspects of severe and unusual weather. You will learn some basic properties of the atmosphere, types of meteorological measurements, and some aspects of how the weather is predicted, but emphasis will be more holistically on the science and how it impacts life/society for several severe and unusual weather phenomenon, such as: great plains blizzards, ice storms, flooding, thunderstorms, tornadoes, hail, lightning, climate and climate change, hurricanes.

Course Objectives: At the conclusion of this course, you should be able to:

- Describe some of the underlying physical processes behind severe weather.
- Explain both the typical occurrences and range of possibility for how extreme the weather can be in place and time.
- Understand aspects of how severe and unusual weather affect you so that you can make smart life decisions.
- Understand aspects of how severe and unusual weather impacts others.
- Learn a science topic on your own through the web and other resources.

Required Textbook: Rauber, Robert M., John E. Walsh, and Donna J. Charlevoix. *Severe and Hazardous Weather: An Introduction to High-Impact Meteorology* (4th ed.), Kendall/Hunt, 2012. The 4th edition was new in August of 2012, so there should be some used copies floating around now. Check both locally and online.

Other course materials:

- Course documents and grades will be disseminated through the OU online course management system, Desire2Learn (D2L): http://learn.ou.edu.
- The publisher maintains a website with additional material and study tools that you may find helpful. Use the code in the front cover of your book to access the online material.
- There are many web pages and resources online for learning meteorology. Please ask me if you find a resource and want my opinion on its quality/accuracy/level and relevance to our course.

Structure of the Course: There are some important things to know about how this class will be taught:

> *Knowledge is something more than a passive reception of scraps and details.*
> *— John Henry Newman*

1. First and foremost: We are going to mimic how you might approach learning a new topic in real life (outside of formal education). If you were interested in learning about tornadoes, you would not start with composition of the atmosphere. You would, however, figure out that you need to understand certain things about the atmosphere—for example, instability—in order to understand why severe storms form where they do. We will start with weather topics (and items from #2!), and deconstruct the topic to understand it. Because our textbook is not ordered this way, teams, that will rotate through the class, will be assigned to keep track of how we traverse through the book and other materials.

2. You will share ownership of the course learning objectives. I will determine some of the learning objectives and you will develop the rest with my guidance. We will rotate through another set of teams that are focused on this task for each topic, but all students are encouraged to suggest learning objectives for any topic.

3. I will to continue to move this classroom toward a flipped classroom with your help. The idea behind a flipped classroom is that lecture material is available in short video segments that can then be organized in any number of ways. Your time with the instructor is then used in active learning. This means you are *with the instructor* when you are working with the concepts to learn them—precisely when confusions become apparent, and questions need to be asked. Last semester I was able to record a few videos, and will record a few more this semester. Help me focus my time on the most difficult subjects by letting me know what material you would most benefit from having available to watch outside of class.

More info:

- http://youtu.be/ojiebVw8O0g
- or read about Salman Kahn's efforts along this line by watching the video links or listening to the episode of Diane Rehm's radio show

Timing of Content:
1/14 – 2/22: Synoptic Scale Meteorology. Includes formation of extratropical cyclones and high-impact winter weather, and needed fundamentals.
2/25 – 4/5: Mesoscale Meteorology. Includes thunderstorms, tornadoes, downbursts, hail, lightning, and needed fundamentals.
4/8 – 5/3: Planetary Scale and Climate. Includes tropical cyclones, climate, climate change, and needed fundamentals.

Special Course Activities:
1. Paper, and Experiencing the Scientific Peer Review Process: Our main writing activity will be a paper in which you explore how your future career intersects with

an aspect of severe weather. (Alternately you may connect the course to life in general.) Using these papers we will mock the peer review process that scientific papers go through before they are published. With first-hand experience, you will better appreciate a key process of science.

Peer review is a powerful learning tool for other reasons as well. You will find yourself thinking about writing differently when you are put into a position of critically reviewing another's work. You will see errors and ways to improve their writing that were not apparent to them, and that process will help you see your own writing with fresh eyes. Reviewing others' work also provides an opportunity to see how your writing compares to that of your peers as you refine your writing skills.

2. Team Teaching: You will be assigned to work on several teams during the semester. This means of actively engaging in learning is a major portion of your course grade. Teams will: 1) help set learning objectives, 2) identify and document the resources we are using to learn, and 3) teach particular topics to your peers. Being put into the position of having to teach something helps you learn it better.

3. Final Exam Period Activity. We will use our final exam period to fully engage our minds in an activity designed to reflect upon what we have learned, and perhaps finish learning key items that may not have quite clicked up to then. This is a required activity, 10% of your grade. Full participation = 100 pts, anything less = 0.

Grading:

Team teaching	40%
Assignments	20%
Quizzes	20%
Paper	10%
Final activity (in lieu of the final)	10%

You are responsible for checking D2L throughout the semester. If you see an error, including a missing or incorrect grade, you must notify the instructor within two weeks of the grade being posted.
Grading Scale: A: 100 – 90%; **B**: 89 – 80 %; **C**: 79 – 70 %; **D**: 69 – 60 %; **F**: < 60%

Quizzes: Quizzes will take place approximately every two weeks. Some will be done in class and some online. The lowest three quiz grades will be dropped. Missed quizzes cannot be made up. No make-up quizzes will be given. The only exceptions to missing more than three quizzes without significantly impacting your grade will be: (1) serious medical condition (illness or injury) of you or an immediate family member; (2) University excused absence; (3) jury duty; (4) religious observance; or (5) military orders. Only in such instances will a quiz be rescheduled, depending on the best interests of the student. Appropriate documentation *must* accompany any excused absence from an exam or quiz.

Assignments: Assignments will be due approximately every two weeks, alternating weeks with quizzes. Assignments must be turned in by the beginning of class on the

assigned due date. If you are sick, please consider scanning (if on paper) and uploading your homework to D2L. The only exceptions are the same as those for quizzes. Missed assignments may be turned in by April 26 for up to 60% credit.

I encourage you to work together to understand class material, and thus understand how to complete class assignments. However, each of you must fully think through each assignment and provide your own answers. Assignments will include an integrity statement for you to sign; do so if you truthfully can. Ask me if you are unsure what constitutes "inappropriate aid." See section on Academic Integrity.

Attendance: You are expected to attend every class session. Frequent in-class activities are important to your learning. The material learned in one class is connected to other material learned in the class on other days. That said, please stay home when you are sick, and work with me to make up missed material.

Absence for Religious Observance: It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. Notify me as soon as possible if you plan to observe a religious holiday so I may work with you on appropriate arrangements.

Student Privacy: I am committed to keeping all your personal information and grades private in accordance with the Federal Educational Rights and Privacy Act (FERPA). As such, I will not share information on your performance in this class with any third party (including parents and academic counselors) without written permission from you, the student. If you wish for me to share your class grades and other information with a third party, send me a written notice designating the third party (by name) and what information I may (and may not!) share with them.

Academic Integrity: All students are instructed to read the official University student's guide to academic integrity: http://integrity.ou.edu/students_guide.html. All alleged instances of academic misconduct will be investigated and, if substantiated, appropriate admonitions will be imposed. Students have the right to appeal such admonitions; see the various resources under the Student tab at http://integrity.ou.edu for further information.

Disability Policy: The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor 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 405-325-3852 or TDD only 405-325-4173.