ATMOSPHERIC SCIENCE 117

Spring 2015

Introduction to Meteorology

Time and Place: Tuesday and Thursday 5:30 pm – 6:45 pm, SLH 3

Taught by: Kristin A. Lewis, Ph.D. Atmospheric Science

Contact: kristina2@unr.edu

Office hours: Wednesday 9:30 – 10:30 am, RM 102, Leifson Physics

Course Administration: ATMS 117.1001 Meteorology in WebCampus Learn

Textbook: Meteorology Today by C. Donald Ahrens, 9th Edition

Catalog Description: Description of behavior of the atmosphere with special emphasis on physical processes involved in weather and climate; applications in every day activities such as transport.

Prerequisites: Completion of the Core Curriculum Mathematics requirement or SAT of 610 or ACT of 27 or CO-REQUISITE. (Co-requisite: MATH 127R or MATH 128 or MATH 176 or MATH 181)

Course Objectives:
Core Objective 04: Physical and Natural Phenomena
• Students will be able to explain the processes by which the natural and physical worlds are investigated, articulate basic principles used to explain natural phenomena, and apply the scientific process to real problems using observational and/or experimental methods.

Student Learning Outcomes:
Core Objective 04: Physical and Natural Phenomena
1) Demonstrate ability to identify key factors with solar and infrared radiation, and convective and latent heat transfer that determine the Earth's radiation budget
2) Demonstrate ability to use actual and model weather data to characterize future, current, and past weather conditions
3) Demonstrate awareness of regional and global weather and the societal consequences

Course Description: Weather is an ever changing phenomena that affects our lives in ways both small and large; whether we are skiers awaiting the next big storm for Mt Rose; a rancher counting on precipitation for next year’s herd; an insurance company trying to decide how to set rates in areas prone to crop failure, hail damage, or floods; or a student wondering what to wear to be comfortable between classes. This is a practical course that provides fundamental understanding of meteorological phenomena. Students will be encouraged to develop a strong conceptual understanding of the atmosphere and how meteorologists classify it, including:

1. Energy and radiation transfer in the atmosphere.
2. Why the earth has seasons and daily temperature variations.
3. Humidity in the atmosphere, and the moisture parameters used to describe it.
5. Atmospheric stability and cloud development. Reading and diagramming atmospheric stability along with moisture/temperature/pressure parameters using a Skew-T logP thermodynamic diagram.
7. Air pressure, winds, and fronts.
8. Global scale circulation of the atmosphere.

**Grading:** The class grade is determined as follows:

40% Homework: assigned text problems and lab assignments
60% Tests: Chapter Quizzes, Midterm, and Final Exam

Students are able to track their grade as the semester progresses. The grade is displayed as a percentage under "Weighted Total" in WebCampus. Semester grades will be given using the following percentage guide:

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>A</td>
<td>90% - 100%</td>
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<td>A-</td>
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<td>B+</td>
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<tr>
<td>B</td>
<td>80% - 87.9%</td>
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<td>B-</td>
<td>79% - 79.9%</td>
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<td>C</td>
<td>77.9% - 78%</td>
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<td>C-</td>
<td>69% - 77.8%</td>
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<td>D+</td>
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<td>D</td>
<td>67.9% - 67.9%</td>
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<td>D-</td>
<td>59% - 67.8%</td>
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<tr>
<td>F</td>
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**Homework and Lab Assignments:** Homework will consist of assignments from the book as well as problem sets, write-ups, and recorded observations, all loosely defined here as “lab assignments”. Students are encouraged to keep their homework well organized and accessible as a study tool, as quizzes and tests will draw heavily from the homework. The homework grade is derived from the following areas:

1.) Assigned “Questions for Thought,” and “Problems and Exercises” from the book at the end of each chapter [15% of final grade]. Each assignment will be collected at the beginning of class. Homework will be graded based on completion, and one or two particular questions from each assignment will be graded for accuracy. Homework must represent each student’s individual efforts (see note concerning academic dishonesty below), and when applicable the student’s work to solve each problem must be shown in completion. Neat work is always appreciated, and that which is too difficult to read won’t be. Late homework is not accepted, but students are encouraged to complete it in preparation for tests.

2.) Assigned “Questions for Review” from the end of each chapter in the text [not graded]. The end-of-chapter quizzes, midterm, and final exam will draw heavily from the homework, particularly from the information covered in the “Questions for Review,” so while this section of the homework will not be turned in or graded, it is a very important study tool. Students are encouraged to understand and answer the “Questions for Review” for each chapter, and keep their work organized as a reference and study guide.

3.) Lab Assignments: Write-ups, recorded observations, analysis and problem sets to be completed both in and out of class [25% of final grade]. Labs will generally include meteorological observations and a discussion of their implications. The desired format for a lab write-up will be discussed in class, and each will be graded based upon completion, detail, and format.

**Quizzes:** Quizzes will be given covering each chapter from the book [20% of final grade]. Each chapter quiz is made up of two sections: a multiple-choice online section, and an in-class written section. The quizzes will draw heavily from the assigned homework questions from the end of the chapter. No make-up quizzes will be given, but each student's two lowest quiz grades will be dropped.

**Midterm Exam:** A mid-semester, cumulative exam to be administered in class [20% of final grade].

**Final Exam** [20% of final grade]. The final exam will in large part be made up of questions from quizzes given earlier in the semester.

**Guide to Success:**
1.) Attend class, every class. Sit in front, participate, and ask questions.

2.) Do the homework, every time, on time. Make sure you understand the concepts and questions covered within.
**Note related to academic dishonesty:** It is often useful to work with others; however, make your homework a unique expression of your own knowledge and insights. Also, while it is inevitable that students may find a solution manual on the web somewhere, it is a poor idea to do so because it curtails your intellectual development. Homework in replicate, or from a solution manual, will not be given any point value for all involved. For further information regarding the code of the university and its policies with respect to academic dishonesty, refer to the University of Nevada, Reno General Catalog.

3.) Attend office hours to ask questions and refine your understanding of the subject matter.

4.) Keep abreast of lab assignments and start the homework early so you have time to cement the information in your mind and seek help where it is needed.

**Special Needs:** Any student with a disability needing academic adjustments or accommodations is requested to contact the instructor as well as the Disability Resource Center in the Thompson Building as soon as possible to allow for appropriate arrangements.

**Academic Success Services:**
Your student fees cover use of:
- Math Center (784-443 or www.unr.edu/mathcenter/)
- Tutoring Center (784-6801 or www.unr.edu/tutoring/)
- University Writing Center (784-6030 or www.unr.edu/writing_center)

These centers support your classroom learning; it is your responsibility to take advantage of their services. Seeking help outside of class helps you develop as a responsible and successful student.

**Recording:** Surreptitious or covert videotaping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. In those cases, students should understand that their comments during class might be recorded.