

ATMOSPHERIC SCIENCE 117 Spring 2011

Introduction to Meteorology

Taught by: Pat Arnott, Professor, Physics and Atmospheric Science.

Office hours: Tuesday, Wednesday, and Thursday 1 - 3 pm, RM 213 Leifson Physics, and at other times by appointment. Please feel free to take advantage of them.

Contact: patarnott@gmail.com, 775-784-6834.

Course Administration: <http://www.patarnott.com/atms117/> and webct.unr.edu.

Time and Place: Mon and Wed 4 pm until 5:15 pm, SLH 003

Textbook: *Meteorology Today* by C. Donald Ahrens, 9th Edition. An awesome book!

Clickers: This is a clickers class. Please purchase a clicker and bring it to class.

OUTLINE:

The objectives of this practical course are:

1. To learn about the thermodynamic structure of the Earth's atmosphere from the surface through the troposphere, stratosphere, mesosphere, thermosphere, and ionosphere: The origin of the atmosphere. Loss of atmospheric gases at the top of the atmosphere and gain of atmospheric constituents from space.
2. To learn about skew-T logP thermodynamic diagrams for the atmosphere, and the foundation for each curve on this plot.
3. To learn about aerosols and clouds, and the connections between them.
4. Practice with modern tools like satellite remote sensing.
5. To learn about atmospheric radiation transfer, including solar radiation, infrared radiation, single and multiple scattering, light scattering by aerosols and cloud hydrometeors, the factors affecting the Earth's radiation balance, the role of radiation in weather and boundary layer dynamics, and the precise meaning of the greenhouse effect. Some questions we will explore are these: why are clouds white, skies blue, what would the sky look like if you could see at infrared wavelengths, and why it matters.
6. To have an introduction to global scale circulation of the atmosphere.

GUIDE TO DOING WELL IN THIS CLASS:

(My observations of students that get the most out of their course work during this brief time in life when you get to be a student)

1. Attend class, every class. Ask questions in class. I benefit greatly from questions students ask in class as it helps me refine my understanding of the subject matter, and it helps me convey topics more effectively. Other students benefit as well. I am very open to questions in class, and find that when we have a discussion rather than a monologue, we all get a lot more out of our time together, and we can make interesting discoveries as we go along.
2. Do the homework every time, on time.
3. Work with others on the homework so that you learn to work in a group, and you gain the insights of others as they gain from you.
4. Be sure you thoroughly understand the homework and course material.
5. Arrange your daily schedule so that you have time for sleep at night, and can digest the course material daily. Work on each course a little each day.
6. Get started early on everything. It helps cement your knowledge.
7. Eat well, and get some exercise. Some diversions help refresh your enthusiasm and skill.
8. Attend office hours to ask questions and refine your understanding of the subject matter.
9. Seek connections with the subjects of this course and others you are taking or will take later on.
10. Pay close attention to subjects that are of great interest to you, and you may be able to link your future employment in some way to the concepts of this course.

GRADING:

40% on homework. 20% on exam 1. 20% on exam 2. 20% on final exam.

Final Exam:

Monday May 9th from 4:30 p.m. to 6:30 p.m.

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 Thompson Student Services 107 as soon as possible to allow for appropriate arrangements.

COURSE DELIVERABLES IN DETAIL

Homework will consist of four activities.

1. Prepare a notebook containing your detailed answers to the “Questions for Review” at the end of each chapter that we cover this semester. ***This notebook will be graded twice during the semester as your midterm exams.*** The final exam will be in-class; it will be open notebook, and the questions will come directly from the “Questions for Review”. In summary, your notebook will be for the mid term exams and final exam. You are highly encouraged to keep an excellent notebook, and to keep it current at all times during the semester.
2. Homework assignments will also be given from the “Questions for Thought” and the “Problems and Exercises” at the end of each chapter. These assignments will be graded carefully.
3. Any special laboratory related activities would be graded as homework.
4. In-class use of clickers will also be graded as part of homework.

Problem sessions (optional attendance) will be scheduled for Fridays for the benefit of students that desire help and/or clarification of classroom concepts.

It is certainly a good idea to work with others; however, make your homework a unique expression of your knowledge and insights. Also, while it is inevitable that students may find a solution manual on the web somewhere, it is not a good 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.

Late homework will not be accepted for grading, though you should still do it.

Exercise discipline and persistence in completing your homework on time, especially the “Questions for Thought” work that is only graded as your mid term exams.

Let's have an excellent semester!!