

METR 3220, Physical Meteorology, Fall 2014

Place and Times: Wednesday and Friday, 9:30am – 10:45am, McEniry 123

Final Exam: Wednesday December 10, 8:00am – 10.30am

Prerequisite: Atmospheric Thermodynamics (METR 3210), Chemistry (CHEM 1251)

Instructor: Dr. Brian Magi, McEniry 232, 704-687-5917, brian.magi@uncc.edu

Office Hours: Tuesday – Thursday, 2:00pm – 3:00pm, and by appointment

Teaching Assistant: Ryan Hubler, McEniry 215, rhubler@uncc.edu

Reference texts available at Atkins Library: *Atmospheric Sciences: An Introductory Survey*, 2nd Edition, J. M. Wallace and P. V. Hobbs; *A Short Course in Cloud Physics*, R. R. Rogers and M. K. Yau; *A First Course In Atmospheric Radiation*, G. W. Petty (selected chapters available at e-reserves at Atkins)

Website: moodle2

Teaching Philosophy

I teach because I want to explore the role of science in our lives. Scientific thinking is an essential part of being human. It can crystalize your observations of the natural world, but also shape your community involvement by honing your skills as a critical thinker and problem solver. Science, whether or not you become a scientist, is a powerful pathway to becoming an engaged citizen of the world. To the future generations of critical thinkers, one scientist said: “**The world needs you. Badly.**”

Description

Physical Meteorology is an introduction to the broad topics of cloud physics, atmospheric chemistry, and atmospheric radiation. Sub-topics, which vary from semester to semester, include warm and cold cloud microphysics, atmospheric electricity, tropospheric chemistry and air quality, radiative transfer, and the role that the atmosphere plays in radiative balance between the Earth and the Sun. We study paths that are a part of the daily life of each and every one of us. Henry David Thoreau said:

Such fantastic feathery scrawls of gauze-like vapor on the elysian ground! We never tire of the drama of sunset. I go forth each afternoon and look into the west a quarter of an hour before sunset, with fresh curiosity, to see what new picture will be painted there, what new panorama exhibited, what new dissolving views. Can Washington Street or Broadway show anything as good? Every day a new picture is painted and framed, held up for half an hour, in such lights as the Great Artist chooses, and then withdrawn, and the curtain falls.

The sky is the best and most accessible arena on Earth to think about physics!

Objectives

1. Develop an understanding of the physical processes in the atmosphere that are important to both weather and climate
2. Develop an understanding of the physical processes in the atmosphere from a system perspective
3. Hone critical thinking skills through observations, hypothesis, deduction, and problem solving

Course Components

Participation Class participation is an important component of this course, and more generally, your education at UNC Charlotte. Take advantage of this unique time in your life.

Lecture Reboot Each student will lead a Lecture Reboot. These are *10 minute presentations* summarizing one aspect of the lectures covered since the last recap, and expanding on the lecture material in your own way. This could involve visiting the library, or closely reading one of the supplementary texts to present a new perspective on the material in lecture. You can use the chalkboard and/or powerpoint. After your presentation, email me either a typed summary or the powerpoint slides from your reboot and I will post these to moodle. Your evaluation will be based on the effort to explore the topic, the clarity of your presentation, and being able to stay within 10 minutes. Details will follow in a handout.

Problem Sets The problem sets synthesize lecture material with analytical thinking. Problem sets will include work completed in the classroom and work completed at home.

Exams There will be two exams during the semester and a cumulative final exam. The dates for the midterm exams will be announced early in the semester. The final exam date and time are listed above.

Grades

Letter grades will be assigned according to the percentage of points earned for the course components listed below. Percentage categories are 90-100, 80-89, 70-79, 60-69, 0-59 and earn A, B, C, D, F, respectively. Assignments must be turned in on time and exams must be taken as scheduled. I will accept assignments turned in early, but not late except under unusual circumstances.

<i>Description</i>	<i>Percent of grade</i>
Lecture Reboot	10%
Problem Sets	20%
Exams	40%
Final Exam	30%

Class Policies

No mobile devices of any sort may be used during class.

University Policies

Academic Integrity Students are responsible for knowing and following The Code of Student Academic Integrity and The Code of Student Responsibility. These can be found at <http://www.legal.uncc.edu/policies/ps-105.html> and <http://www.legal.uncc.edu/policies/ps-104.html> respectively. Standards of academic integrity will be enforced in this course. *Questions regarding the policies and enforcement of the policies should be addressed to me during class or during office hours.*

Accommodations UNCC abides by interpretations of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 that stipulates no student shall be denied the benefits of an education "solely by reason of a handicap." Disabilities covered by law include, but are not limited to, learning disabilities, hearing, sight or mobility impairments, and other health related impairments. This course will gladly provide accommodations for students with documented needs. If you feel you need an accommodation, please contact the Office of Disability Services, Fretwell 230, Phone 704-687-4355 for the necessary evaluation and documentation.

Diversity The University of North Carolina at Charlotte is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, sex, sexual orientation, age or disability. In keeping with this commitment, UNC Charlotte actively seeks to promote diversity in its educational environment through its recruitment, enrollment and hiring practices.