

METR 3210, Atmospheric Thermodynamics, Spring 2015

Place and Times: Tuesday and Thursday, 3:30pm – 4:45am, McEniry 118

Final Exam: Thursday May 7, 2:00pm – 4:30pm

Prerequisite: Introduction to Weather and Climatology (METR 3140), Calculus I (MATH 1241)

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

Office Hours: Tuesday and Thursday, 12pm – 1pm, Wednesday 12pm – 2pm, and by appointment

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

Required text: *An Introduction to Atmospheric Thermodynamics*, A. A. Tsonis, Cambridge University Press, 2nd Edition

Reference texts available at Atkins Library: *Atmospheric Sciences: An Introductory Survey*, 2nd Edition, J. M. Wallace and P. V. Hobbs; *A First Course in Atmospheric Thermodynamics*, G. W. Petty

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

Atmospheric thermodynamics is the study of how air moves and stays still in the atmosphere. This is the heart of every aspect of atmospheric sciences, weather forecasting, and climate science. Topics include: atmospheric composition, equation of state, hydrostatics, first and second laws of thermodynamics for dry, moist, and saturated air, atmospheric stability, parcel buoyancy, and thermodynamic diagrams.

Objectives

1. Gain a basic understanding of the thermodynamic processes associated with dry and moist air throughout the troposphere
2. Develop the necessary knowledge to plot, analyze, and interpret atmospheric thermodynamic sounding observations for use in weather analysis and forecasting
3. Develop critical thinking skills through problem solving

Course Components

Participation Each student is required to attend class and actively participate (take notes, ask questions, and complete in-class activities) throughout the period. Use of smart phones, dumb phones, laptops, tablets, ouiji boards, texting machines, email doo-hickeys, paper airplanes, or anything like this during class is prohibited. Any student engaging in such activity will lose **all participation** points for the semester. 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.

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. Exams may not be rescheduled.

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>
Participation	10%
Problem Sets	30%
Mid-Term Exams	30%
Final Exam	30%

Class Policies

No mobile or electronic 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.