METR 4220, Atmospheric Chemistry, Spring 2015

Place and Times: Tuesday and Thursday, 9:30am – 10.45am, McEniry 118

Final Exam: Thursday May 7, 8.00am – 10.30am

Prerequisites: CHEM 1251 and MATH 1242 (or permission of instructor)

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

Primary Textbook: *Introduction to Atmospheric Chemistry*, D. J. Jacob (PDFs available online at http://acmg.seas.harvard.edu/publications/jacobbook/index.html and hard copy at Atkins library)

Supplemental Textbooks: *Atmospheric Chemistry and Physics: From Air Pollution to Global Change*, J. H. Seinfeld and S. Pandis; *Chemistry of the Upper and Lower Atmosphere*, B. J. Finlayson-Pitts and J. N. Pitts; *Basic Physical Chemistry for the Atmospheric Sciences*, P. V. Hobbs; *Earth Under Siege*, R. P. Turco; *Introduction to Atmospheric Chemistry*, P. V. Hobbs (texts are available at Atkins library)

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

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 a engaged citizen of the world. To the future generations of critical thinkers, one scientist said: "**The world needs you. Badly.**"

Description

Atmospheric chemistry directly and indirectly impacts climate and meteorology, but the chemical state of the atmosphere at any time is determined by the principles of chemistry and meteorology. In this course, we will discuss how basic physical chemistry and the Earth's atmosphere are related. We will examine topics that include air quality, stratospheric chemistry, ozone depletion and the ozone hole. Throughout the semester, we will touch on the critical role that atmospheric chemistry plays in global warming.

Objectives

1. Develop an understanding of the chemical processes in the atmosphere
2. Develop an understanding of how chemistry and meteorology control air quality
3. Hone critical thinking skills through observations, hypothesis, deduction, and problem solving

Course Components

Participation Class participation can completely alter your classroom and university experience. Some lectures may include a short 'concept' quiz or short group work to re-visit previous material.

Project and Presentation Students will be responsible for a class project and a 15 minute presentation of their project near the end of the semester. Details will be provided within the first weeks of the course.

Problem Sets Problem sets are based on the class material and designed to help you successfully synthesize lecture materials with analytical thinking. This synthesis is a key component of your success on the exams.

Exams There will be 2 mid-term exams and a cumulative final exam. The dates for the mid-term exams will be set early in the semester. The final exam is set by UNC Charlotte.

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.

Description	*Fraction of Grade*
Participation	5%
Project/Presentation	20%
Problem Sets	15%
Mid-term Exams	35%
Final exam	20%

Course Outline

This schedule is subject to change and is intended to provide a general framework for the course. Time spent on specific topics will depend on the backgrounds and interests of the students.

Weeks	*Topics*
1	Properties of the atmosphere
2-3	Stratospheric chemistry
4-14	Tropospheric chemistry
15-16	Class project presentations

Class Policies

No mobile devices of any sort may be used during class. If you use a mobile device without my prior consent, you will not receive any of your participation points. If you continue to use a mobile device, you will lose points from other components of the course. I will not offer any warning regarding this.

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.

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.