

ATMS/CHEM 458 Global Atmospheric Chemistry

Autumn 2010

General Information

Instructor: Becky Alexander, Assistant Professor, Atmospheric Sciences

Schedule: MTuWF 12:30 - 1:20 PM; JHN 026

Grading:

Short Exams (4): 60%

Problem sets (4): 10%

Final Project: 15% Review Paper or NSF-like Proposal

Participation: 15% Presentations/Problem solving/Paper discussions

Contact Information

Office: 306 ATG Building

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Office hours: after class or by appointment

Class Web Site: <http://www.atmos.washington.edu/academics/classes/2010Q4/458>

NOTE: Please contact me if you have any questions. Conceptual issues are best handled in person (after class, office hours, or by special appointment).

Textbooks

The required textbook for the course is:

Introduction to Atmospheric Chemistry, **D.J. Jacob**, Princeton University Press

Other excellent references are: (All books are on reserve in the Odegaard library)

1. *Introduction to Atmospheric Chemistry*, **P.V. Hobbs** Cambridge University Press

2. *Chemistry of Atmospheres*, **R. Wayne**; Oxford University Press

3. *Atmospheric Chemistry and Physics, from Air Pollution to Climate Change*, **J.H. Seinfeld and S.N. Pandis**, Wiley-Interscience

4. *Chemistry of the natural atmosphere*, **Peter Warneck**

5. *Chemistry of the Upper and Lower Atmosphere*, **Finlayson-Pitts and Pitts**, Academic Press

Lectures

This is a rough outline for where we are heading. We will cover some topics in more detail than others, and the time frames will be flexible. We will also have the opportunity to discuss current scientific literature in each topic area.

Week 1-2 **Fundamentals: Atmospheric Structure, Sources, Removal, Lifetime**

Weeks 3-5 **An Earth System Perspective: the Atmosphere in Climate and Biogeochemical Cycles**

Weeks 5-6 **Stratospheric Ozone Depletion: Development of a detailed understanding**

Weeks 7-8 **Tropospheric Pollution: The connection between local and global processes**

Weeks 8-10 **Aerosols, Clouds, and Acid Deposition**

Week 11 **Student presentations**

Problem solving / Quiz sessions

Most Tuesdays we will either have either a problem solving session or a short exam (4 of each). Homework problems will be assigned, and are due the day after the problem solving session. During the problem solving session, students may be called upon at random to work through the solution on the board. This is a low pressure environment with class participation encouraged. You will not be graded on whether or not you get the problem exactly right on the board. Everyone (including those in the audience) will be graded on their grasp of course concepts; on evidence that they have made a serious attempt to think about and solve the problems ahead of time; and on their ability to show and explain what they are doing and why they are doing it. This will comprise a portion of your participation grade.

Final project information

Students write a paper and give a 15-minute presentation during the last week of class. A partial list of possible topics is available on the course web-site. Whatever topic you choose, you must check with me to make sure the topic is appropriate and of reasonable scope. The paper should be at least 5 pages long (but no more than 10 pages) using ~1.5 line spacing and include at least 10 references, as well as figures to illustrate your points.