

ATMOSPHERIC CHEMISTRY—CHEM 415
Winter Quarter 2008

Instructor: Dr. Scott Nickolaisen
Office: PS 820
Phone: (323) 343-2382
Office hours: M,T,Th: 10:00 – 11:30 a.m., W: 12:00 – 1:00 p.m.
Class hours: T,Th 11:40 a.m. – 1:20 p.m., Biol Sci 247
Text: *Chemistry of Atmospheres, 3rd Edition* Richard P. Wayne
The text will be placed on reserve in the library.

This course will cover current topics of interest in atmospheric chemistry. An outline of the subjects to be discussed is:

- I. Classifications of Earth's atmosphere
- II. Processes influencing the atmosphere
 - A. Weather and circulation of air
 - B. Natural phenomena such as volcanoes and lightning
 - C. Interaction between the atmosphere and the oceans
 - D. Anthropogenic influences
- III. Chemical kinetics and photochemistry
- IV. The stratosphere
 - A. Natural formation and destruction of ozone
 - B. Anthropogenic perturbations to the ozone cycle
 1. Stratospheric ozone depletion
 2. Ozone holes
- V. The troposphere
 - A. Photochemical smog
 - B. Acid rain
 - C. The "Greenhouse" effect and global warming
- VI. Modelling the atmosphere

Grading will be based on four exams (50 points each), a research project and classroom presentation developed as an assigned group (100 points), and a final paper (100 points).

Exam dates are:

Tuesday, January 22, 2008
Tuesday, February 5, 2008
Tuesday, February 19, 2008
Tuesday, March 4, 2008

For the joint project, each group will be assigned a topic to fully research and evaluate. Each member of the group will be required to give a 10 – 15 minute classroom presentation on his or her group's assigned topic. The first presentation will introduce the problem to the class. This will occur in the 3rd – 4th week of class. The second presentation will explain the scientific input necessary to fully understand the problem. This will occur in the 6th – 7th week of class. The third presentation will explain the current state of knowledge on the topic including societal impacts and possible remedies. This will occur in the final week of class. Each group member will also write an 8 - 15 page paper summarizing his or her group results. The final paper will be due on Thursday, March 6, 2008