

Department of Atmospheric Sciences

COURSE ANNOUNCEMENT – SEMESTER II – 2003–2004

ATMOS 348B: Atmospheric Chemistry
(Same as CEE 348 and ENVST 348)

Call number: 00796

Instructor: Prof. Donald Wuebbles, 106 Atmos. Sci. Bldg., 244-1568

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Room and Time: 109 Atmospheric Science Bldg., 9 a.m. M W F

Credit: 3 hours or 0.75 unit

Prerequisites: M E 207, CHEM 340, or ATMOS 301 or equivalent,
or consent of instructor

This course will analyze current understanding of the chemistry of the atmosphere, including the biogeochemical cycles of atmospheric trace gases, their interactions on global and regional scales, and their significance for the atmospheric photochemical and climate systems. The important fundamental concepts that are central to understanding air pollutants, the formation, growth and dynamics of aerosols, the meteorology of air pollution, and the transport and removal of species in the atmosphere will be discussed.

Course Content:

1. **Introduction to the Atmosphere.** Origin of the atmosphere; Atmospheric structure and physical properties; Chemical composition of the atmosphere; Atmospheric dynamics.
2. **Fundamental Principles Governing the Chemistry in the Atmosphere.** Solar radiation and its absorption; Atmospheric mass transport; Photochemistry; Chemical kinetics; Equilibrium.
3. **Global Atmospheric Chemistry.** Importance of ozone, hydroxyl and other constituents.
4. **Air Pollution Chemistry.** Atmospheric trace gases; Gas-phase Atmospheric Chemistry; Aqueous-phase atmospheric chemistry; Mass transfer; Aerosol; Acid rain.
5. **Biogeochemical Cycles of Atmospheric Trace Gases.** Sources, sinks/removal; Transport and distribution; Global budget; Anthropogenic and natural impact.
6. **The Role of Chemistry in Climate Change.**

Texts: *Atmospheric Chemistry and Physics: From Air Pollution to Climate Change*, by J. H. Seinfeld and S. N. Pandis, John Wiley and Sons, 1997. (Required)

