

MEA 493M: Introduction to Atmospheric Chemistry
MEA 593I: Introduction to Atmospheric Chemistry
Department of Marine, Earth and Atmospheric Sciences
Spring 2005

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| Class Time: | Tuesday/Thursday, 1:05-2:20 pm | Instructor: | Dr. Yang Zhang |
| Class Location: | Room 1109 Jordan Hall | Office: | Room 5151 Jordan Hall |
| Office Hours: | 1:30-3:00 pm Fridays (or by appointment) | Phone: | 919-515-9688 |
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Objectives

This course is designed for graduate and upper-level (junior/senior) undergraduate students who are interested in learning about air quality/atmospheric chemistry. It will introduce the fundamentals of atmospheric chemistry/air quality and serve as a step-stone to more advanced courses on air quality such as MEA 593J/793J: Air Quality Modeling and Forecasting and MEA 779: Advanced Air Quality. Upon completion of this course, the students should have a knowledge of major urban-to-global scale air pollution issues that we are facing today and a good understanding of important atmospheric chemical processes underlying these issues. Students who are interested in pursuing an environmental/air quality position upon graduation or summer internships in MEAS or other organizations are highly recommended to take this course to acquire chemistry background required for such positions.

Textbook

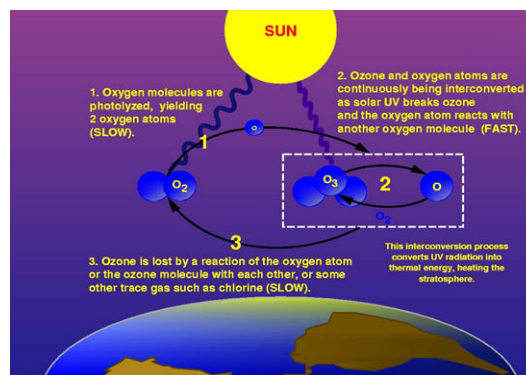
Atmospheric Pollution: History, Sciences and Regulation, M.Z. Jacobson, Cambridge University Press, New York, 2002, 399 pp.

Course Description

The course provides a comprehensive introduction to fundamentals of atmospheric composition, their sources, properties, and chemistry in the atmosphere, and their effects on human health and the environment. It first covers the history of discovery of chemicals, the evolution of the earth's atmosphere, and the structure and composition of the present-day atmosphere. It then covers science of major air pollution issues on urban through global-scale including urban outdoor air pollution, indoor air pollution, acid deposition, stratospheric ozone depletion, air pollution transport across political boundaries, and global climate change.

Specific course topics will include:

- History of discovery of atmospheric chemicals
- Regulations and management of air pollution
- Atmospheric structure and composition
- Atmospheric photochemistry/chemical kinetics
- Chemistry of urban outdoor/indoor pollution
- Chemistry of troposphere
- Chemistry of stratosphere
- Chemistry of precipitation
- Acid deposition
- Global stratospheric ozone reduction
- The greenhouse effect and global warming
- Effect of meteorology on air pollution



Prerequisites: CH 101, CH102, MEA 320, or consent of instructor.