

MEA/CE 779: Advanced Air Quality
Department of Marine, Earth and Atmospheric Sciences
Department of Civil, Construction and Environmental Engineering
Spring 2004

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:	3:00-4:30 pm Fridays (or by appointment)	Phone:	919-515-9688
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Objectives

This graduate level course in air quality focuses on the chemistry and physics of the atmosphere and offers an up-to-date examination of important atmospheric chemical processes. Upon completion of this course, the students should have a knowledge of which air pollutants are of concern from an environmental, health and climate standpoint. They should know the sources, fate, atmospheric transport and transformation of these pollutants, as well as the policies developed to help manage them. The students will gain a solid understanding of the science underlying a variety of atmospheric processes and will be introduced to advanced topics in each subarea of air quality research.

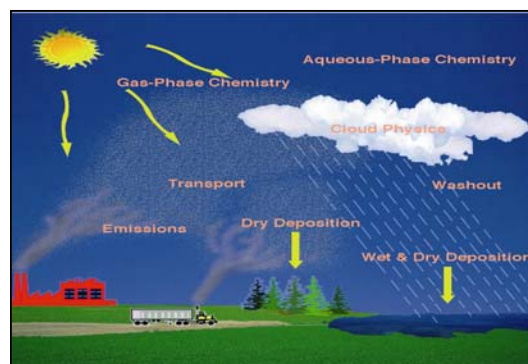
Textbook

Atmospheric Chemistry and Physics: from Air Pollution to Climate Change, S.N. Pandis and J.H. Seinfeld, Wiley Interscience, 1997.

Course Description

The course provides a detailed description of the formation, growth, dynamics and meteorology of air pollutants, the interaction of atmospheric chemistry and climate, the radiative and climatic effects of gases and particles, and the formulation of mathematical chemical / transport models for the atmosphere. Important publications in leading journals will be reviewed. Students will be given an opportunity to conduct a term project either individually or as a team member. Course topics will include:

- Atmospheric photochemistry and chemical kinetics
- Chemistry of the stratosphere and troposphere
- Formation, dynamics and chemistry of aerosols
- Formation and chemistry of clouds
- Meteorology of air pollution
- Atmospheric transport, diffusion, and removal
- Interaction of atmospheric chemistry and climate
- Radiative and climatic effects of gases and particles
- Air quality models: formulation, application and evaluation



Prerequisites

CH201 and CE/MEA 479 or consent of instructor.