

Course Syllabus

ATMO 363: Atmospheric Chemistry

Fall 2007

TR: 11:10 to 12:25

Instructor: Prof. Renyi Zhang

1. Atmospheric Composition and Structure

Concentration units. Major and minor constituents. Vertical structure of the atmosphere. Atmospheric lifetimes. Atmospheric circulation. Radiation balance.

2. Fundamental Principles of Atmospheric Chemistry

Thermodynamics and thermochemistry. Chemical reactions kinetics. Photochemistry. Heterogeneous chemistry.

3. Atmospheric Aerosols

Physical and chemical properties. Sources and sinks. Aerosol-cloud interactions. Stratospheric aerosols

4. Tropospheric Chemistry

Hydroxyl radical OH, nitrogen oxide NO_x, methane oxidation, carbon monoxide. Chemical cycles of sulfur, nitrogen, carbon containing compounds. Urban air pollution: sources of air pollution, London and Los Angeles fogs.

5. Stratospheric Chemistry

Chapman model. Catalytic ozone destruction cycles. Antarctic ozone hole.

Faculty Contact Information:

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Examinations:

A mid-term examination will be given on Thursday, October 25, and this exam will count for 30% of the final grade.

A final examination will be given from 3 to 5 p.m. on Friday December 7, and this exam will count for 30% of the final grade.

Homework:

Homework problems will be given periodically throughout the course and will count for 40% of the final grade.

Overall Basis of Grading:

Mid-Term Exam = 30%, Final = 30%, Homework = 40%

Required Textbooks:

None

Reference Books:

Primary:

M.Z. Jacobson, Atmospheric Pollution: History, Science, and Regulation

Secondary:

Seinfeld and Pandis, Atmospheric Chemistry and Physics

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