AATM515 **Aerosol Physics**

Fall 2025

Instructor information

Instructor: Prof. Fangqun Yu; ETEC-333, (518) 437-8767; fyu@albany.edu

Lecture Time & Location: Mon & Wed 3:00pm - 4:20pm, ETEC 482

Office Hour: After class, email me to set up appointments (preferred), or just stop by my office

Course information

Course Number: 8979

Course Title: Aerosol Physics

Credit Hours: 3

Prerequisite: College physics; Differential equations; ATM 504 or permission of instructor

Course Objectives and Description: To enable students to have an in-depth understanding of the following aspects of atmospheric aerosols: Characterization of aerosols (size distributions, compositions, optical properties); dynamics and thermodynamics of aerosols; physical processes controlling properties of aerosols in the atmosphere; aerosol field measurements and numerical modeling; aerosol-cloud-precipitation interactions; and environmental impacts of atmospheric aerosols.

Grading Criteria

Homework: 32 % (4 sets, 8% each); Mid-term examination: 30 %; Term project presentation: 15%; Term paper: 15%; Attendance/participation in class discussion: 8%.

Grading Scale

A+=97-100; A=93-96; A-=90-92; B+=87-89; B=83-86; B-=80-82; C+=77-79; C=73-76; C-=70-72; D=60-69; F= below 60

Text Book/References: **Atmos. Chem. and Phy.** - Seinfeld & Pandis, 2006, or 2016

Relevant journal papers, reports

Topic Outline

(1) Overview of aerosols and research issues
(2) Characterization of aerosols
(3) Dynamics of single aerosol particles
(4) Thermodynamic of aerosols
(5) Nucleation
(6) Condensation/evaporation
(7) Dynamics of aerosol populations
(8) Dry deposition, wet deposition
(9) Aerosol general dynamic equation and microphysics modeling
(10) Aerosol measurements and online datasets
(11) Organic aerosols
(12) Aerosol-cloud interactions and other aerosol-related research topics

Homework policy

You have at least 1 week to complete and hand them in by the beginning of the class that they are due in. LATE HOMEWORK will incur a penalty of 10% per day unless there is a documented and legitimate reason, such as a health issue or travel to a conference or fieldwork, etc. Homework will not be accepted after the answers have been graded and returned to the rest of the class.

Academic integrity

We encourage an atmosphere of open inquiry and mutual respect. While collaborations with fellow students on homework is permissible you must always submit your own work and your own thoughts, and give proper credit to others for previous work and ideas. Every student must be familiar with the standards of academic integrity at UAlbany. Claims of ignorance, of unintentional error, or of academic or personal pressures are not sufficient reasons for violations of academic integrity. Please review these policies in the Graduate Bulletin at https://www.albany.edu/graduatebulletin/requirements_degree.htm#standards_integrity.