

Air Pollution, ATS555
Colorado State University
Spring 2026
Mondays and Wednesdays @ 4:00 – 5:15
Room: 115 Natural Resources

Instructor: Dr. Sonia Kreidenweis (soniak@colostate.edu), Atmos. Chem. 19, Foothills

Office hours: By appointment (also in Scott Building, Room TBD)

Teaching assistant: TBD

Prerequisites: CHEM 113 and (MATH 261 or MATH 340) and (PH 122 or PH 142).

Class Website: Canvas for ATS555 (<http://canvas.colostate.edu/>)

Optional Textbook: Air Pollution: Engineering, Science, and Policy, by Sternberg, College Publishing, 2015.

Objectives:

Our overall goal will be to develop a working knowledge of basic air-quality issues. Specific objectives include:

1. Develop an understanding of types and sources of air pollution.
2. Examine concentrations of air pollutants and their effects on health and welfare. Review regulations governing air pollution.
3. Examine the meteorological factors that contribute to air-quality degradation.
4. Examine the basic chemistry of the atmosphere and how it contributes to secondary pollutant formation.
5. Consider methods for air-pollution measurement and control.
6. Examine indoor, regional, and global air-pollution issues.

Course structure:

The course is offered for three credits. At least 2 hours of effort are expected to complete assignments outside of class for each hour of class time. The class is conducted in an in-person lecture/discussion format. PDF files of course notes, slides, and links to recordings will be made available on Canvas after each class session.

There will be 2 exams this semester (midterm and final). Regular **homework assignments** will be assigned during the semester. For each topic, there will be a **quiz** of several short-answer questions done through Canvas to evaluate the class's understanding of the lectures. The students will generally have several days to complete each quiz.

Grading:	Homework	30%
	Quizzes	30%
	Exams.....	30%
	Participation	10%

Topics

Optional textbook reading in addition to course notes

Introduction/Air Pollution History	Chapter 1
Air Pollution Types, Atmospheric Composition, Concentrations, and Sources	Chapters 1 and 2
Particulate Matter	Chapter 8
Visibility	Chapter 7.4
Air Pollution Meteorology	Chapter 5
Dispersion of Air Pollutants	Chapter 6
Air Pollution Regulation	Chapters 3, 8.4, 9.4, 10.4, 11.1.5, 12.1.4, 13.1.3
Indoor Air Quality	Chapter 15
Exposure, and Health and Welfare Effects	Chapters 8.3, 9.3, 10.3, 11.1.3, 12.1.3, 13.1.2
Combustion and Gas control	Chapters 9 and 10
Mobile Sources	Chapter 16
Aerosol Physics and Control	Chapters 7 and 8
Photochemistry and ozone	Chapters 11 and 12
Climate Change	Chapter 14

Statement on Academic Integrity

This course will adhere to the CSU Academic Integrity Policy as found in the General Catalog (<https://policylibrary.colostate.edu/policy.aspx?id=442>) and the Student Conduct Code (<https://resolutioncenter.colostate.edu/conduct/code/>). At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.

CSU Principles of Community: ***Inclusion:*** We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions ***Integrity:*** We are accountable for our actions and will act ethically and honestly in all our interactions. ***Respect:*** We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge. ***Service:*** We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities. ***Social Justice:*** We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.