

Air Pollution, ATS555

Colorado State University

Fall 2018

Mondays and Wednesdays @ 4:00 – 5:15

Room: Engineering E106

Instructor: Dr. Jeffrey Pierce (jeffrey.pierce@colostate.edu), Atmos. Sci. Main 220
<http://pierce.atmos.colostate.edu>

Office hours: ENGR A102F – M/W 3:00-4:00 in weeks where homeworks are due, or by appointment.

Teaching assistant: Ali Akherati (Ali.Akherati@colostate.edu)

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

Class Website: Canvas for ATS555 (<http://info.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. The class is conducted in a lecture/discussion format. PDF files of course notes and slides will be made available on Blackboard after each class session.

One **mid-term** will be given.

A short **term presentation** on an air quality topic is required. The presentations will be in the second half of the course. Details on format and timetable will be discussed later.

Several **homework assignments** will be made during the semester.

Grading: Homework 40%
 Midterm test 20%
 Term presentation..... 35%
 Participation 5%

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
Midterm exam Date: ~10/17	
Indoor Air Quality (guest lecture by Ellison Carter) Date: TBD	Chapter 15
Exposure, and Health and Welfare Effects (guest lectures by Drs. John Volckens and Sheryl Magzamen) Dates: 10/31, 11/5	Chapters 8.3, 9.3, 10.3, 11.1.3, 12.1.3, 13.1.2
Air Pollution Regulation (guest lectures by Greg Zwicke), Dates: 11/7, 11/12	Chapters 3, 8.4, 9.4, 10.4, 11.1.5, 12.1.4, 13.1.3
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
Term presentations Dates: 12/3, 12/5	

CLASS POLICIES

UNIVERSITY POLICIES: Students are expected to follow the CSU Student Honor Pledge (<http://tilt.colostate.edu/integrity/honorpledge/>). This course will adhere to the CSU Academic Integrity Policy as found in the General Catalog (<http://www.catalog.colostate.edu/FrontPDF/1.6POLICIES1112f.pdf>) and the Student Conduct Code (<http://www.conflictresolution.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.

POLICY ON COLLABORATION: Students are encouraged to discuss homework assignments. However, each student must complete their own assignment. If I determine that students are simply copying assignments, I will pursue action through the Office of Academic Integrity (<http://tilt.colostate.edu/integrity/>). Any copying on tests will be similarly not tolerated.

POLICY ON LATE HOMEWORK ASSIGNMENTS: Late homework assignments will not be accepted, but I will drop the assignment with the lowest score.

POLICY ON REMARKING TESTS AND HOMEWORK: Students who disagree with how their assignment, test, or project has been marked should resubmit their work with a written explanation of their concern. The work will be re-evaluated by the instructor in its entirety.

POLICY ON MISSED TESTS: Alternative arrangements for completing missed tests will be made given the submission of appropriate documentation.