

ATS 555
Air Pollution
Spring 2010
T Th 11:00 – 12:15, NESB 101

Instructor:

Prof. Sonia Kreidenweis (Room 19 Atmospheric Chemistry; 491-8350;
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On-campus Office:

Room 205A, Engineering Arcade; 491-2557

Office Hours (tentative):

12:15 – 1, Tuesdays

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 regional and global air pollution issues.

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

Text:

Fundamentals of Air Pollution, 4th Edition, Daniel Vallero, 2008.
Additional handouts may also be assigned for reading.

Course structure and grading criteria:

The course is offered for three credits. The class is conducted in a lecture / discussion format.

Two **mid-term exams** and one **final examination** will be given.

Several graded **homework sets** will be assigned during the semester.

Course grades will be assigned using the +/- system. Grades will be weighted as follows:

Homework: 30%

Mid-term exams: 20%, 20%

Final Exam: 30%

Date	Lecture	Reading (pages in text)	HW due
January 26	Introduction / History / The Atmosphere / Air Pollution Types / Atmospheric Composition / Concentrations	Ch 1, 2, 3	
January 28	Gaseous Pollutants / Particulate matter / Air Pollution Sources	Ch 10	
February 2	Visibility / Acid Deposition	Ch 14	
February 4	Acid Deposition	Ch 14	
February 9	Health and Welfare Effects	Ch 11, 12, 13, 14, 15	
February 11	Air Pollution Meteorology	Ch 5	# 1
February 16	Air Pollution Meteorology	Ch 5	
February 18	Air Pollution Meteorology	Ch 5	
February 23	Dispersion of Air Pollutants	Ch 21	# 2
February 25	Dispersion of Air Pollutants	Ch 21	
<i>March 1</i>	<i>Review</i>		
March 2	Air Pollution Regulations	Ch 24, 26, 27, 28	# 3
March 4	Combustion and gas control	Ch 30, 31, 32, 33, 34	
<i>March 8</i>	Mid-term exam 1		
March 9	Combustion and gas control	Ch 30, 31, 32, 33, 34	
March 11	NO _x / Mobile sources	Ch 35	
March 16 - 18	<i>Spring Break</i>		
March 23	Mobile sources	Ch 35	
March 25	<i>Tour of Engines laboratory</i>		
March 30	Aerosol physics and particle control	Ch 32	# 4
April 1	Aerosol physics and particle control	Ch 32	
April 6	Photochemical smog	Ch 7	# 5
April 8	<i>Review</i>		
April 13	Mid-term exam 2		
April 15	Photochemical smog	Ch 7	
April 20	Photochemical smog	Ch 7	# 6
April 22	Air Pollution Measurement	Ch 16, 17, 18	
April 27	CO Air Quality Issues (Guest lecture Dr. Paul Roberts, Sonoma Tech)		
April 29	The Ozone Hole	Ch 15	#7
May 4	Indoor air quality	Ch 25	
May 6	<i>Review</i>		
May 13	Final Exam (1:30 – 3:30)		