

ATS 560 (2 Credits)
Air Pollution Measurement
Spring 2020

Instructor: Jeff Collett, 491-8697, collett@colostate.edu, ATSW 125

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Office Hours: by Arrangement

Objectives:

1. Gain experience in several techniques commonly used in experimental air quality monitoring and research.
2. Become familiar with the process of designing, proposing, conducting, and reporting on independent research projects.
3. Learn to work with colleagues in conducting experiments and interpreting experimental data.

Text:

Readings will be provided by the instructor from various sources. These are intended to provide background for the experiments we will conduct. Additional experiment descriptions will be provided detailing procedures for each experiment.

Course Structure and Grading Criteria:

The course is offered for two credits. The class is conducted in a lecture/discussion and lab format and will meet Mondays 1:00-1:50 PM and Wednesdays 1:00-3:40 PM.

Each student is expected to provide a written summary and analysis of each experiment (except where “no report required” is indicated) and to turn in a copy of records kept during the conduct of each experiment. Students are encouraged to discuss experiment findings with classmates, but are required to submit their own reports. Each student will be responsible for leading an oral in-class discussion of at least one experiment following its completion.

Each student is responsible for proposing and completing an independent, individual or group research project. Each student will orally present their project proposal and their final project findings to the class.

Grades will be weighted as follows:

Lab Write-ups:	60%	Project proposal presentation:10%
Lab Oral Discussion:	10%	Project and final presentation:20%

Students are expected to spend a minimum of 2 hr effort outside class, for each hour of structured class time, on assigned readings, preparation of lab reports, and conduct of independent projects. This course will adhere to the CSU Academic Integrity Policy as found on the Academic Integrity website (<http://tilt.colostate.edu/integrity/>). 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.

Lab reports are due in class on the discussion date for that lab, unless specified otherwise.
No written lab reports are required for Labs #2, #5, or #7. Discussions are scheduled for Labs #2 and #5.

**ATS 560 - Air Pollution Measurement
Spring 2020 Schedule**

Week	Date	Lecture (M)	Experiment (W)
1	January 20, 22	Holiday	Intro Lab Safety
2	January 27, 29	Statistics	Lab Reporting Class Project Intro
3	February 3, 5	Statistics (cont'd)	Lab #1: pH Measurement
4	February 10, 12	Wet deposition	Lab #1 discussion (Lab #1 report due) Lab #2: Precipitation Sampling
5	February 17, 19	Atmospheric Aerosols/Sampling	Lab #3: Aerosol and trace gas sampling
6	February 24, 26	Project proposal discussion	Lab #3 Sample Extraction and Analysis
7	March 2, 4	Intro to IC	Lab #4: IC calibration
8	March 9, 11	Lab #3 discussion (Lab #3 report due)	Project Proposal Presentations
9	March 16, 18	Spring Break	
10	March 23, 25	Volatile Organic Compound (VOC) Measurement	Lab #5: VOC prep Lab #4 discussion (Lab #4 report due)
11	March 30, April 1	Air quality impacts of oil and gas development	Lab #5: VOC Measurement
12	April 6, 8	Carbonaceous Aerosols	Lab #6: Carbonaceous aerosol analysis
13	April 13, 15	Lab #5 Discussion (no Lab #5 report required)	Project
14	April 20, 22	Lab #6 Discussion	Project
15	April 27, 29	Aerosol Measurement Techniques	Lab #7 Optical Particle Counter Measurements
16	May 4, 6	Lab #2 Discussion (no Lab #2 report required)	Project Presentations

Useful references

- Air Sampling Instruments, 9th Edition. American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 2001.
- Skoog, D. A.; D. M. West, F. J. Holler, and S. R. Crouch. Fundamentals of Analytical Chemistry. 9th ed., Brooks/Cole Publishing, 2013.
- Kulkarni, P., Baron, P.A. and K. Willeke (Editors). Aerosol Measurement Techniques, 3rd Edition. Wiley Interscience, New York, 2011.