

Atmospheric Interactions: Urban Air Pollution

Spring, 2017

Course Number: SCI 331U-001

CRN: 64524

10:00 – 11:50 am, Tues & Thurs, SRTC B1-82

Instructor: Dr. Meenakshi Rao

Email: mrao@pdx.edu

Office Hours: ~~12:30 – 2:00pm, Thurs, SRTC 206-C~~ 12:00 – 1:30 pm, Thurs, SRTC B2-27

Or by appointment

Course Overview

Air is around us everywhere, yet we seldom pause to think about it. In this class we take the time to understand some of the basic properties of air: what it is made up of and how it moves. We see how the everyday life in cities affects the air – locally and globally – and in turn, the polluted urban air affects the humans who live in cities as well as the environment in and around them. We examine strategies used to reduce the impact of air pollution, and emerging ideas on how to create more sustainable urban atmospheres.

The class will design and conduct an air pollution study to get practical experience with monitoring air pollution.

Weekly class work will include a mix of reading, lab work, discussions, research, and in-class activities.

Learning Goals

1. Understand basic atmospheric science and air pollution nomenclature and concepts to enable a critical analysis of air quality issues as presented in the media.
2. Understand the impact of air pollution from the local, to the regional, national, and global scales.
3. Identify and utilize literature resources and government databases to learn more about relevant air quality issues.
4. Design and implement an air quality study to collect, analyze, and present air quality data to address an issue relevant to the PSU community.
5. Explore the ethical and/or political issues in improving urban air quality.

Text/Readings

There is no required text for the class. Instead, we will make use of readings, videos, and other media from our library and online. Materials for each week will be posted at the start of the week.

Assignments & Projects

In addition to class participation, course grades will be based on:

1. Participation

Participation will be assessed on contribution to class discussions, and in-class activities.

2. Weekly assignments (Week1-Week6)

Each week, there will be a short assignment, usually consisting of a few problems and a brief essay type answer. Assignments must be turned in at the beginning of the class period on the due date. There will be a penalty for late submission (25% off for each day late).

3. Mid-term assignment

The mid-term will be an individual 6-8 page research paper on an air quality issue. More details will be given in class.

4. Final assignment

The final assignment will include both group and individual work. We will collect data as a class. Each group will formulate their own research question, and analyze the collected data to come up with an answer. Each group will present their findings to the class in a 15-30 minute long presentation.

Each student will also submit an individual project report.

Weekly assignments (drop worst score)	30%
Midterm paper	20%
Final - group (data collection, analysis, presentation)	25%
- individual paper	15%
Participation	10%

Expectations

- **Please check the D2L news regularly for updates to the schedule, submission dates, readings, discussion posts, etc.**
- **Attendance is mandatory for the lab portion of the class, from weeks 6-10. There will be a 2% deduction for every class missed.**
- Students are expected to attend all classes.
- Assignments are due at the start of the class period. **Please do not put them in my office (206 or B2-27) if submitting late. I am not at PSU regularly, and I have a shared space. So papers can be misplaced or removed by the janitor.**
- Please review “What is Plagiarism?” <http://guides.library.pdx.edu/c.php?g=271329&p=1811916>
- Please read and abide by the PSU Code of Conduct. <https://www.pdx.edu/dos/psu-student-code-conduct>

Miscellaneous

When emailing me, please include the course, your last name and a clue about your purpose in the subject line (for example, if you were writing with a question about an assignment, you might write, “SCI 331: Smith week 5 assignment question” in the subject line).

If you have a learning or physical disability, please contact the Disability resource Center for approval to request accommodation.

Course Schedule

Below is a tentative course schedule. It is very likely to change, so pay attention to what is said in class.

Week1	04-Apr	What is urban air pollution?	06-Apr	History of air pollution	
Week2	11-Apr	Air pollution & health	13-Apr	Air pollution & climate change	Assignment 1 due
Week3	18-Apr	Structure and composition of the atmosphere	20-Apr	Atmospheric Emissions: Sources and sinks	Assignment 2 due
Week4	25-Apr	Chemistry & Transport	27-Apr	Mitigation Strategies	Assignment 3 due
Week5	02-May	Movie: Who killed the electric car?	04-May	Discussion: Global, regional, local AQ/ brainstorming ideas	Assignment 4 due/peer review of midterm paper
Week6	09-May	Making a scientific claim - how to design a scientific experiment	11-May	Design data collection	Assignment 5 due/midterm paper due
Week7	16-May	Data collection	18-May	Data collection	
Week8	23-May	Data collection	25-May	Data collection	
Week9	30-May	Analysis/work on presentations	01-Jun	Analysis/work on presentations	Assignment 6 due
Week10	06-Jun	presentations	08-Jun	presentations	
Finals week	13-Jun				Final individual paper due