

# Atmospheric Interactions: Urban Air Pollution

## SCI 331U

### Syllabus – Fall 2009

**Instructor:** Dr. L. George, 725-3861, [georgeL@pdx.edu](mailto:georgeL@pdx.edu)

**Graduate Teaching Assistant:** Meenakshi Rao

**Text (on reserve at Millar Library):**

Earth Under Siege, Richard Turco 1997

**Class Meetings:** SBII Rm 469, TTh 2-3:50PM

#### Science and Liberal Art Cluster Learning Goals:

- *Understand and apply selected fundamental principles from one or more areas of scientific inquiry.*
- *Directly experience the methods and processes of scientific inquiry, including experimental design, the recording, quantification, and interpretation of observations and the effective communication of results*
- *Access and utilize scientific information and concepts in support of their life roles as individuals, citizens, learners, consumers, producers, and family members.*

#### Learning Goals for this Course:

- Students will understand basic atmospheric science/air pollution concepts and nomenclature as necessary to be critical analysts of air quality issues as they appear in the media.
- Students will understand how the “quality” of the atmosphere is managed on a local, regional, national and global scale.
- Students will be able to identify and utilize literature resources and government databases to learn more about air quality issues.
- Student will be able to design, conduct, present and defend a scientific study related to air quality.

#### Short Description of Graded Assignments:

*Weekly Response Papers/Exercises/Quizzes:* These short assignments (1-2 pages in length) are designed to reinforce and expand upon material covered in class. They will take the form of directed response papers, short problems and/or exercises. They will be scored on a scale of 0-2. These assignments cannot be made up if missed.

*Midterm Exam:* This 2-hour exam is designed to probe your understanding of basic atmospheric science and air pollution concepts. You will be expected to demonstrate a level of competency that will support your work in the field research project.

*Politics of Air Report:* This 6-8 page literature-based research paper is an opportunity for you to explore in depth an air quality issue that interests you. A separate assignment sheet will be handed out.

*Small Group Research Project:* During the last half of the course you will be involved in a field research project for which you will be identifying your research question, designing and conducting your project, analyzing your data and presenting your results in an oral presentation and final report. **You will be learning how to do this** (or improving on existing skills) in this class.

#### Grading:

Weekly Response Papers/Exercises (i)	20%
Midterm Exam (i)	25%
Politics of Air Report (i)	25%
Small Group Research Project (g+i)	25%

**Late Policy:** Late assignments lose 3% of credit each day they are late. (Example: 3 days late= 9% off).  
**Assignments are due at the beginning of class.**

\*Consistent participation in class, including completion of all assigned activities and work products, will be taken into consideration in the final grade.

\*\* Students taking the class P/NP must satisfactorily complete all assignments in order to receive a passing grade.

**Attendance:** Students are expected to attend all classes.

**PASS/NO PASS OPTION:** Student must pass all assignments with a C- or better to pass the course.

**Schedule (Tentative):**

(Readings will be assigned in class.)

- Week 1      Sept 29: Introduction to course  
                    Local, regional, national air quality issues in the news  
                    Assignment: Analysis of air quality issue in the news  
                    Oct 1: Air Quality and Health Impact  
                    Benchmarks Exercise - in class
- Week 2      Oct 6: Fundamentals of AQ - Structure and Composition  
                    Needle in a Haystack Exercise  
                    Oct 8: Fundamentals of AQ - Urban Air Pollution I  
                    Smokestacks Exercise
- Week 3      Oct 13: Fundamentals of AQ - Urban Air Pollution II  
                    EPA Databases Exercise  
                    Oct 15: Fundamentals of AQ - Urban Air Pollution II  
                    Review - two questions do and don't understand
- Week 4      Oct 20: Movie "Taken for a Ride"  
                    Oct 22: Air Quality Management and Regulation  
                                Task Force Exercise
- Week 5      Oct 27: Global AQ -  
                    Oct 39: **Mid Term Exam**
- Week 6      Nov 3: Making a claim - Scientific Presentations  
                    Nov 5: **ATTENDANCE REQUIRED**  
                                **"Politics of Air" Paper Due**  
                                Atmospheric research - what can we measure - brainstorming of project
- Week 7      Nov 10: **Start on Research Project**  
                    Nov 12: Work on Research Project
- Week 8      Nov 17: Work on Research Project  
                    Nov 19: Work on Research Project
- Week 9      Nov 24: Presentation of findings  
                    Nov 26: Thanksgiving - University Closed
- Week 10     Dec 1: Final Presentations (1st group)  
                    Dec 3: Final Presentations (2nd group)

**Final Week: Final reports DUE by Dec 10th NOON – hard copy to my mailbox in ESR office, SB2 228**

Note: We have provided a good deal of class time to work on class projects. However, please be aware that in order to successfully complete your projects it will be necessary to work outside of class time as well.