11:670:453 Air Quality Modeling
Environmental Sciences Building, Room 323
Thursday, 6:00 – 9:00 PM

Instructors:
- Greg John gregory.john@rutgers.edu
- Chris Salmi chris.salmi@rutgers.edu

Objectives:
- To provide the students with principles of air pollution meteorology and the application of air quality models to address practical issues, concerns, and problems.
- The students will develop analytical skills and problem solving techniques by modeling different types of air pollution sources and practice communication skills by presenting their modeling results.
- Expose students to modeling software including: HYSPLIT, SCREEN3, AERMOD and its supporting programs.

Office Hours: By appointment.

Text: None

Resources: See Sakai

Course Structure and Grading:

The class involves lecture and laboratory operation of selected air quality models to explore fundamental concepts. Periodic homework assignments are due at the start of class. Late homework will not be accepted without prior approval of the instructor. There will be several quizzes throughout the semester. These will be returned to the students.

In lieu of mid-term and final exams, the student will complete a paper and a final project. The paper will involve the development of a Modeling Protocol and Modeling Results for a selected source discussed during class. The final project will be on a topic identified in class, or one the student develops, with instructor approval. The student will prepare a 10 - 15-minute oral presentation and submit a written report (8 – 10 pages), as if for a client or decision maker.

Grades are weighted as follows:

Grading Components	Weight
Homework / Classwork (Includes: Example Modeling Protocol & Modeling Results Paper)	30%
Quizzes / Tests	20%
Final Project	45%
Class Participation	5%

It is expected the students will attend class. More than 3 unexcused absences will result in lowering of letter grade to the next level.

Project Grading:

Final Project	
Grading Components	**Weight**
Written Report Organization & Clarity	25%
Comprehensiveness & Completeness	25%
Technical Quality	25%
Presentation	25%

Preliminary Syllabus

Week	Topic
1 – Sept 6	Introduction; Expectations; Laws & Regulations; National Ambient Air Quality Standards
2 – Sept 13	Air Pollution Meteorology Basics
3 – Sept 20	Dispersion Equations; Modeling with SCREEN3 Student Air Quality Event Presentations (Homework #1) Quiz #1
4 – Sept 27	Using AERMOD for Point Sources Basics Student Air Quality Event Presentations (Homework #1)
5 – Oct 4	Using AERMOD; Air Permit Modeling Protocol Elements Student Air Quality Event Presentations (Homework #1)
6 – Oct 11	Introduction to HYSPLIT Quiz #2
7 – Oct 18	HYSPLIT; Ozone Example Modeling Protocol & Modeling Results Report Due
8 – Oct 25	Ozone Finalize Project Topics
9 – Nov 1	Modeling Other Source Types Quiz #3
10 – Nov 8	Modeling Other Source Types
11 – Nov 15	Air Toxics
12 – Nov 20 (Tuesday)	Preparation of Final Project
13 – Nov 29	Final Project Presentations Quiz #4
14 – Dec 6	Final Project Presentations
	No Final Exam