Meteo 455 – Atmospheric Dispersion
Spring 2010 Syllabus
January 6, 2010

General information

- Instructor: Prof. Marcelo Chamecki
  Office: 506 Walker
  Phone: (814) 863-3920
  Email: chamecki@meteo.psu.edu

- Meetings: Tuesday 2:30–3:45 PM in 607 Walker
  Thursday 2:30–3:45 PM in 607 Walker

- Office hours: Tuesday 3:45–5:00 PM in 506 Walker
  Wednesday 5:00–6:00 PM in 506 Walker
  or by appointment

Course content and material

This course covers both the theory and current practice of numerical modeling of the turbulent dispersion of effluents from sources in the atmospheric boundary layer. The course is designed to provide (i) fundamental background in dispersion theory and boundary-layer meteorology on which current models are based and (ii) practical experience with regulatory models recommended by the U.S. Environmental Protection Agency (SCREEN3 and AERMOD).

There is no textbook for this course. All material required for this course will be available through the ANGEL site. I will upload reading assignments to our ANGEL site on a weekly basis and remind you in class every time I do so. Reading the posted material is part of your obligations as a student enrolled in this course.

Course evaluation

Students will be evaluated based on a midterm, a final exam, and several homework sets and lab reports. While you are encouraged to discuss the homework problems and lab exercises with your colleagues, the work you then hand in under your name is to be summarized and written down by you. I do not give full marks for homeworks sets and lab reports handed after the due date. Final grade composition:

1. Homework problems and lab reports – 40%
2. One midterm examination – 30%
3. One final examination – 30%

Tentative schedules: Midterm – Thursday March 4$^{\text{th}}$
Final – Sometime during the finals period

Except for illness, make-up exams will be conducted only for students who make arrangements with me prior to the scheduled exam time.

List of recommended references

This is a list of useful references for our course. Some reading assignments will be selected from these books, but you are not required to own any of the books.

- Air Pollution Meteorology and Dispersion – S. Pal Arya
- Fundamentals of Stack Gas Dispersion – M.R. Beychok
- An Introduction to Boundary Layer Meteorology – R.B. Stull
- Turbulence and Diffusion in the Atmosphere – A.K. Blackadar
- Lectures on Air Pollution Modeling – A. Venkatram and J.C. Wyngaard
- Atmospheric Diffusion – F. Pasquill
- Atmospheric Chemistry and Physics: From Air Pollution to Climate Change – J.H. Seinfeld and S.N. Pandis
- Turbulent Diffusion in the Environment – G.T. Csanady
- Boundary Layer Climates – T.R. Oke
- The Atmospheric Boundary Layer – J.R. Garratt
- Mixing in Inland and Coastal Waters – H.B. Fischer et al.
- The U.S. Environmental Protection Agency (EPA) website – http://www.epa.gov/ttn/scram/aqmindex.htm

Academic integrity

We subscribe to the College's academic integrity police. See http://www.ems.psu.edu/students/integrity/index.html.