Fall, 2007
E536 Environmental Chemistry
SYLLABUS

Professor Dr. Ronald A. Hites, SPEA 410H, 855-0193, office hours anytime, e-mail: HitesR@Indiana.edu.

Assoc. Instructor The Associate Instructor (name to be announced) will have office hours at least twice a week. The sessions will focus on the problem sets. The times and locations of these sessions will be specified soon.

Textbook Ronald A. Hites, *Elements of Environmental Chemistry*, John Wiley & Sons, 2007. Please buy a copy either at the IU or TIS bookstores or through Amazon.com. This is an intentionally short book, and we will go over it fully, and we will completely work out all of the problems in the text and in the problem sets at the ends of the chapters. For those of you who need a detailed review of chemistry at the undergraduate level, you may want to go to one of the bookstores and buy the textbook for the lowest level chemistry (CHEM C101) course taught in our Chemistry Department.

Problem Sets There will be six problem sets; each should take about 4-6 hours each to complete. The answers are provided at the end of the book. Although the problem sets will not be collected or graded, it is a good idea to do them. Most of the exam questions will be drawn from the problem sets. Solutions to the problem sets will be discussed extensively in class, but the detailed solutions will not be posted so as to keep you from just trying to memorize the answers as opposed to understanding the concepts.

Attendance Class attendance is required. If you come to class, you will learn more and that may help with earning a living later. Of course, graduate students do not need to be told this fact of life.

Exams There are three exams. All exams will be during class, but we will try to give you an extra 10 minutes at the end to check your work. Exam I will be on Oct. 1; Exam II will be on Oct. 31; and Exam III will be on Dec. 5. The exams will be weighted equally. There will be *no* make-up exams. The exams will be cumulative, although the most recent material will be emphasized. In addition, the exams will get a little more difficult and/or longer with time. The above dates may change -- be sure to keep track.

Grading Although the full array of plus and minus grades will be used, the cut point between A and B on the exams will likely be 85%.

Whining Day	All complaints about the course material, grading, and the instructor will be heard only on IU's Official Whining Day, December 15.
Prerequisites	One course in chemistry with a laboratory

Course Outline

Unit I	Tool Skills I: Estimating, unit conversions, gas law calculations, and stoichiometry.
Unit II	Tool Skills II: Flow rates, fluxes, residence times, steady and non-steady state box models, and kinetics.
Exam I	----
Unit III	Atmospheric chemistry, stratospheric ozone, chemical kinetics, photochemical smog, greenhouse effect.
Unit IV	CO_2 equilibria, carbonate systems, acid rain.
Exam II	----
Unit V	Chemodynamics: vapor pressure, water solubility, adsorption, K_{ow}, bioaccumulation.
Unit VI	Pesticides and toxic metals.
Exam III	----