

CEE-PUBH 5730-6730
ENVIRONMENTAL CHEMISTRY OF ORGANIC CONTAMINANTS
Fall Semester 2017

Instructor: Bill Doucette
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Lecture (ENGR 202): 1:30-2:20 PM (MWF)
Office hours: 2:30-3:30 PM (MWF) or by appt.

Course Goals and Objectives: This course is designed to examine the various properties and processes that determine the fate of organic contaminants in the environment and provide students with an understanding of methods used in the analysis of environmental samples for organic contaminants.

Prerequisite by Topic: General chemistry

<u>Topic</u>	<u>Approx. # of lectures</u>
Introduction to Organic Chemicals in the Environment	2
Introduction to Environmental Fate Processes	2
Thermodynamics/Kinetics	2
Vapor Pressure, Solubility, Henry's Law Constants	6
Octanol/water partition coefficients, Bioconcentration, Acidity Constants, Sorption	6
Chemical Transformation Reactions (Hydrolysis, Redox, Photolysis)	6
Biological Transformation Reactions	2
Estimation of Environmental fate properties	3
Environmental Fate Modeling (fugacity models)	3
Fate projects	2
Analysis of Organic Contaminants in Environmental Samples (Sampling, extraction/concentration techniques, instrumental analysis)	10

Suggested text and readings:

CEE 5730-6730 Class notes/handouts

Schwarzenbach, R.P., P.M. Gschwend, D. M. Imboden 2016. Environmental Organic Chemistry. 3rd Ed. John Wiley & Sons, New York, NY.

<https://www.epa.gov/tsca-screening-tools/download-epi-suitetm-estimation-program-interface-v411>

U.S. EPA. Test Methods for Evaluating Solid Wastes: Physical/chemical Methods. U.S. EPA, Washington, D.C. (<https://www.epa.gov/hw-sw846>)

Grading*:

Project 1 (fate)	20%
Quizzes/homework (fate)	40%
Exam 1 (fate)	20%
Project 2 (analysis)	5%
Exam 2 (analysis)	10%
Quizzes/homework/lab (analysis)	5%
	100%

*Separate grading curves will be developed for CEE 5730 and 6730.

In addition, a special project assignment is required for all CEE 6730 students.

Final exam (Monday 12/11, 1:30-3:20 PM)

*Grade for late assignments reduced by 50% (within one week late), 75% (greater than one week)