

## Environmental Health Sciences 264

### FATE AND TRANSPORT OF ORGANIC CHEMICALS IN THE AQUATIC ENVIRONMENT

Instructor: Dr. Mel Suffet

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Text/Reader – Required

Exams: Final: In class, closed book 50% of grade

Homework: To be distributed

Mid-term Report: 1) Evaluation of an Environmental Mass Transport Mechanisms 20% of grade  
2) Aquatic modeling Problem 30% of grade

Term Project: Fate and Transport of an Organic Chemical: Comparison of a Computer Model vs. Reality  
A Student Assistant will help with the Computer modeling part of the course

#### Lecture Topics

##### I. Overview-Models and Calculations

1. Introduction – Lecture 1
  - A. "Normal" Element Cycles in the Environment
  - B. Interactions between the Air and Water Environment - Sources, Sinks and Rates
  - C. Pollutants - Chemical, Physical, Biological Fate
  - D. Water - The mover and Shaker
2. Models - Equilibrium Type - "CEPAC" Lecture 2-4
3. The Nature of Organic Chemicals
  - A. Vapor Pressure
  - B. Solubility
  - C. Structural Activity Relationship
4. Models - Junge Box Models- Global Approach Lecture 5
5. Models - Fugacity – Mackey Lecture 6
6. Models - Multimedia – Cohen

##### I. Transport-Interfacial Phenomena Lectures 7-12

1. Air-Water Interfacial Phenomena (Lectures 7-8)
2. Water-Solid Interfacial Phenomena (Lectures 9-11)
3. Air-Solid Interfacial Phenomena Lectures (12)

##### II. Chemical Processes Lectures 13-17

1. Hydrolysis
2. Photolysis

##### III. Biological (Biochemical) Processes 18-20

1. Bioaccumulation
2. Biodegradation