**CE 5331: Environmental Organic Chemistry**

Department of Civil, Environmental, and Construction Engineering

Texas Tech University

Spring 2020

**Instructor:**

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**Lecture Schedule**: TTh: 8:30 – 10:00 AM (MERC 102)

**Office Hours**: After class and by appointment

**Prerequisites:** CHEM 1307 and 1308and ENVE 5315 or equivalent are required as prerequisite courses

**Textbook:** *Environmental Organic Chemistry.* Rene P. Schwarzenbach, Philip M. Gschwend, Dieter M. Imboden (2016) 3rd Edition.

**Course Objectives:** Environmental organic chemistryfocuses on the study of the chemical and physical interactions which determine the fate of organic chemicals in environmental systems, with emphasis on partitioning and reactions involving anthropogenic organic contaminants in aquatic systems. The goal is to have students acquire the tools to qualitatively and quantitatively understand the chemical processes that determine the fate of organic contaminants following release into the environment

**Course Outcomes:**

1. Gain an understanding of how molecular interactions and macroscopic transport phenomena determine the distribution in space and time of anthropogenic organic compounds released into the environment
2. Do this by utilizing structure of the chemical to deduce that chemical’s physical-chemical properties and intrinsic reactivities and by
3. Emphasizing quantitative problem solving and the application of theoretical knowledge to the solution of real-world problems.

**Assessment Tools:** The accomplishment of course objectives and outcomes will be evaluated through quizzes, homework assignments, mid-term, final and/or other assessment tools.

**Reading Assignments:** Reading from the textbook is required. Please read through the assigned chapter(s) prior to class.

**Homework:** There will be 5-6 homework assignments, approximately one every other week. All assignments will be submitted as ***group efforts (groups of 2-3)***. You will be asked to sign up as homework groups during the second week of the course, but the instructor may choose to assign different homework groups throughout the duration of the course.

**Discussion Assignments:** In addition to the text, this class will review research papers to be discussed in class. Paper discussions will be student-led: each student will lead one discussion during the semester. A preliminary list of assigned papers (by week) is provided below. A sign-up sheet will be circulated the second week of class, with student-led discussions starting in the third week. Each discussion should begin with a 10-minute overview of the paper, followed by a carefully directed discussion by the entire class of the contents of the paper. A few (3-5) PowerPoint slides may be useful in starting the discussion, but students are responsible for bringing their own computers if PowerPoint slides are to be used. Remember, this is not a “prepare a lecture” assignment: the goal of this exercise is ***to engage the entire class in a scholarly discussion of relevant scientific literature***.

**Course Grades**: The semester grade for this course will be determined as follows:

Homework: 20%

Course Participation: 15%

Midterm: 25%

Paper Discussion: 15%

Final: 25%