EVE 491/591
Toxicology
Spring Semester 2010
Tu, Th
1:40 – 2:50
Room EGC 207

Instructor: André Butler, Associate Professor
Environmental and Mechanical Engineering

Office: Suite 105D, School of Engineering Availability: By appointment
Phone: 301-2476 (w)
Email: butler_aj@mercer.edu

Required Richards, Ira S. Principles and Practices of Toxicology,

Course Description:
An introduction to toxicology principles, systemic toxicity, and toxicology practice in view of the public health and environmental engineering frameworks.

Course Objectives:
Upon successful completion of this course, students will be able to

1. Identify and characterize biological and chemical toxins.
2. Describe the ultimate fate of pollutants/contaminants in the environment.
3. Relate dose and response.
4. Discuss chemical-induced mutagenesis and carcinogenesis.
5. Explain the roles of the immune system, skin, liver/kidneys, cardiovascular system, respiratory system, and nervous system in view of chemical exposure and toxicity.
6. Analyze toxicity testing data and make informed decisions.
7. Assess risk from a chemical exposure perspective.

Outcomes will be measured and assessed by grades earned for homework, exams, research paper critiques, discussion, and a project (for graduate students). In addition, primary instructor evaluation and student feedback on the perceived quality of the course will be used to make future improvements.

Course Website: http://faculty.mercer.edu/butler_aj/eve491tox.htm
Visit often for course updates.

Prerequisites (and/or corequisites):
EVE 486, Public Health

Course Content:

1. Introduction/review 1-2 weeks)
   a. A brief history of toxicology
   b. Important chemicals and their properties
   c. The toxic response
   d. Plant and animal toxins
   e. The fate of environmental pollutants

2. Fundamental toxicology principles (~4 weeks)
   a. Dose and response
b. Absorption and elimination of toxins
c. Biotransformation
d. Mutagenesis and carcinogenesis

3. Systemic toxicity (~4 weeks)
a. The immune system
b. Skin
c. Liver and kidneys
d. Cardiovascular system
e. Respiratory system
f. Nervous system

4. Toxicology practice (~4 weeks)
a. Regulations
b. Toxicity testing
c. Risk assessment

Grading:
The final grade will be determined as follows:

- Homework/Project: 25%
- Exam#1: 25%
- Exam#2: 25%
- Final Exam: 30% Thursday, 5/6/2010 (7-10 pm)

Homework: Homework is an important component of the class and will be distributed regularly. Collaboration is acceptable, but each student must submit an individual assignment. Late homework assignments will not be graded.

Critiques: Research articles focusing on various aspects of toxicology will be distributed up to four times throughout the term. Each student will be required to submit a 600-word critique of the article, adhering to a specific format that will be discussed.

Class Participation: Students are expected to attend class and actively participate during discussions.

Class Standards
1. Please turn off cell phones and pagers before entering the classroom.
2. The honor code provisions as outlined in the Bulletin and in the student handbook, The Lair, will be assumed for everyone. Plagiarism is a violation of the honor code and is prohibited.
3. This syllabus is subject to change.

Student Support Services Policy:
Students requiring accommodations for a disability should inform the instructor at the close of the first class meeting or as soon as possible. If you are not registered with Disability Services, the instructor will refer you to the Disability Support Services office for consultation regarding documentation of your disability and eligibility for accommodations under the ADA/504. In order to receive accommodations, eligible students must provide each instructor with a “Faculty Accommodation Form” from Disability Services. Students must return the completed and signed form to the Disability Services Coordinator on the 3rd floor of the Connell Student Center. Students with a documented disability who do not wish to use academic accommodations are also strongly encouraged to register with Disability Services and complete a Faculty Accommodation Form each semester. For further information, please contact Carole Burrowbridge, Disability Services Coordinator, at 301-2778 or visit the website at http://www.mercer.edu/stu_support/swd.htm.