

Advanced Toxicology (VME 6603)
Section XXXX, 3 graduate credits
Spring Semester, 2008
Tuesday, Thursday 3-4:30 CEHT Conference Room

Instructor information

David S. Barber, Ph.D.: **Course coordinator**
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Office Hours by appointment

General Description: This course covers concepts in toxicology including dose-response relationships, biotransformation, mechanisms of toxicity and means of assessing toxicity for various organs. The course will be presented as a series of lectures, presentations, group discussions and homework assignments. Each student will give a class presentation of a current issue in toxicology that is relevant to the class.

Course Objectives:

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

- Describe the dose-response relationship and interpret data of this type
- Predict metabolites produced by Phase I and Phase II biotransformation and identify those that are bioactivation steps
- Demonstrate knowledge of common mechanisms of toxicity including protein adduction, lipid peroxidation and oxidative stress, DNA damage and repair, and necrosis/apoptosis
- Demonstrate familiarity with chemicals that cause various types of toxicity to the major organ systems of the body and identify the mechanism by which those chemicals cause toxicity
- Demonstrate the ability to design toxicological experiments to address specific hypotheses using common toxicological testing methods
- Describe the role of toxicity in environmental regulation and drug development

Textbook: Casarrett & Doull's Toxicology- The basic science of poisons (6th edition)
Additional reading materials or web-based sources will be supplied in class.

Other requirements: Students registering for this course should have a working knowledge of the basics of biology, mammalian physiology, and biochemistry. They should also have had VME6602 General Toxicology or the equivalent. Students who have questions regarding these requirements should contact the instructor.

Schedule

Date	Topic	Instructor
Jan. 9	Principles of Toxicology	Dr. Barber
Jan. 11	Structure and Function of the Liver	Dr. Barber
Jan. 16	Martin Luther King Day No class	
Jan. 18	Metabolic Polymorphisms	Dr. Reginald* Frye
Jan 23	Metabolic Enzymes and Toxicity	Dr. Margaret James*
Jan 25	Oxidative Stress as a mechanism of toxicity	Dr. Barber
Jan 30	Pulmonary Structure and Function in Toxicology	Sarah Miller*
Feb 1	Pulmonary Toxicology	Dr. Barber
Feb 6	Kidney Structure and Function	Dr. Richard Johnson*
Feb 8	Renal Toxicology	Dr. Barber
Feb 13	Apoptosis and Cell death	Dr. Barber
Feb 15	Structure and Function of the Nervous system- receptor theory, second messengers, blood brain barrier, blood-CSF barrier	Dr. Barber
Feb 20	Kinetics	Dr. Vickroy*
Feb 22	Kinetics	Dr. Vickroy*
Feb 27	Receptor mediated neurotoxicity, AChE, excitotoxicity	Dr. Barber
Mar 1	Midterm Exam	
Mar 6	SOT meeting	

March 8	SOT meeting	
Mar 11-18	Spring Break	
Mar 20	Mitochondrial inhibition and protein adducts as mediators of neurotoxicity	Dr. Barber
Mar 22	Brain immune toxicity	Dr. Liu*
Mar 27	Dermal Structure and Function, Toxic responses	Dr. Wasdo
Mar 29	Specific Dermal Toxicants	Dr. Wasdo
Apr 3	Metal Toxicity	Dr. Barber
Apr 5	Signal Transduction in toxicity	Dr. Naser Chegini*
Apr 10	Multistage Carcinogenesis, DNA adduct formation and epigenetics	Dr. Barber
Apr 12	Biomarkers in Toxicology	Dr. Denslow
Apr 17	Risk Assessment	Dr. Tolson
Apr 19	Cancer chemoprevention	Dr. Shiverick
Apr 24	Exposure Assessment	Dr. Freeman*
Apr 26	Risk Assessment II	Dr. Barber

Assignments/Grading: There will be an exercise associated with each topic. The exercises are designed to teach students to think critically about the concepts associated with that topic. Assignments are typically due the week after they are given, unless otherwise indicated by the instructor. After exercises are completed, they will be discussed at the end of the next class to provide an opportunity to address questions that arise. As part of these exercises, students will be expected to read and discuss articles that address contemporary issues in toxicology. Students will receive a letter grade based on their scores for the exercises (30% of the class grade) examinations covering conceptual material presented during the semester (50% of class grade) and class presentation and participation (20% of class grade).

For more information, contact: Dr. David Barber, email: barberd@mail.vetmed.ufl.edu

Academic Integrity – Students are expected to act in accordance with the University of Florida policy on academic integrity (see Graduate Student Handbook or this web site for more details: www.dso.ufl.edu/judicial/procedures/academicguide.php).

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior. We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

Attendance and Make-up Work – Students are expected to attend and be prepared to participate in all class sessions. Personal issues with respect to class attendance or fulfillment of course requirements will be handled on an individual basis.

Students with Disabilities - Students requesting classroom accommodation must first register with the Dean of Students Office, which will provide documentation to the student. The student should then provide this documentation to the instructor.