

Biochemical Mechanisms of Toxicology Fall 2015

Office Lipman Hall Rm 123 (W-10-Noon)

Email cooper@aesop.rutgers.edu

Lecture 138A Foran Hall T,Th 2:15-3:35pm

September		
3	No Class will start on the 10 th	
8	MONDAY SCHEDULED CLASSES No Class	
10	#1 Introduction to Toxicology	Cooper
15	#2 Toxicology Tests for Evaluating Effects	Cooper
17	#3 General Dose Response Terminology	Cooper
22	#4 Risk Assessment Weight of Evidence (WOE)	Cooper
24	#5 Factors Involved in Adsorption	Cooper
29	#6 Distribution (Toxicokinetics) and PBPK models	Cooper
October		
1	#7 Metabolism Phase I	Cooper
6	#8 Metabolism Phase I & II (Continued)	Cooper
8	#9 Metabolism Phase II & III	Cooper
13	#10 Reactive intermediates & Tissue Response	Cooper
15	Test #1 Lectures up to 10/2 (#1-#9)	
20	#11 Cellular Response to Toxic Agents - Inflammation	Cooper
22	#12 Organ System Toxicity – Liver	Cooper
27	#13 Organ System Toxicity – Kidney	Cooper
28	#14 Organ System Toxicity – Blood	Cooper
30	#1 Organ System Toxicity – Reproductive	Cooper
November		
3	#16 Subcellular Responses to Toxic Agents	White
5	#17 Organ System Toxicity – Skin	White
10	#18 Organ System Toxicity – Teratology	Cooper
12	Test #2 Lectures #10-#17	
17	#19 Antibiotic Resistance	Katz
19	#20 Organ System Toxicity – Lung	Cooper
24/26	THANKSGIVING	
December		
1	#21 Organ System Toxicity – Cardiovascular	Cooper
3	#22 Organ System Toxicity – CNS	Cooper
8	#23 Organ System Toxicity - CNS/PNS	Cooper
10	#24 Organ System Toxicity – PNS	Cooper
15	FINAL Cumulative plus Test #3 lectures #18-24 12 - 3 PM	

Grading: Tests 1-3 equal 60% of grade (20% each), Attendance 5% and Final 35% for 100%. Grades are based on total cumulative pts. and 100-90% A, 89-87% B+, 86-80% B, 79-77% C+, 76-70% C, 69-60 D, >59% F. Test questions are short answer essays and thought questions.

If a student misses a Test without a doctor's note or previously agreed upon alternative date for the exam, the exam will be given by Dr. Cooper as an oral examination.

Dr. Cooper's Office hours are Wed. 10-Noon, or by appointment Rm. 123 Lipman Hall.

Text Book: There is no assigned text book. Reading material will be supplied through Sakai, however any up to date Toxicology Text will likely cover the general material to be discussed in class. Additional journal articles will also be added to the Sakai site and the students are to read this material and questions will be asked on the tests from these postings and class discussions.

Lecture slides will be made available through the Sakai website.

The goal of the course is to familiarize the student with general techniques used in Toxicology to evaluate the adverse effects of xenobiotics and drugs. The lectures will integrate information that will bring together the chemical, physiological and biochemical processes that are involved in the mechanism of action of a compounds effect on an organism. This will allow the student the opportunity to integrate didactic information obtained in other courses to understand how a chemical is exerting its effect.

The course and the tests are designed to make the students integrate information in a written short answer essay approach. This will require both knowledge of didactic information and how to incorporate this information in a larger understanding of biochemical pathways and disease processes.

Learning Goals:

Fundamental concepts in chemistry, physiology, evolution and biochemistry

Understand and apply basic principles and concepts in toxicology based on physical properties of chemicals, biochemical and physiological pathways that explain effects on biological systems from the cellular to the individual. Explain and be able to assess the toxicity of a compound based on information provided both in class and from scientific research articles provided online.

The ability to think in an integrated manner and look at a problem from diverse perspectives, from the molecular to the whole organism to the ecosystem.

Assessment: Pre and post course basic concept questions will be asked dealing with basic biochemical based toxicological principles that should be learned by greater than 80% of the class compared to < 30% at the beginning of the class.