Introductory Pharmacology and Pharmacokinetics
ADVS 5350/6350
Credits - 3

Instructor: Jeffery O. Hall, DVM, PhD, Diplomat ABVT
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American Disability Statement:

"If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center, preferably during the first week of the course. Any requests for special considerations relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats - larger print, audio, diskette, or Braille"

Purpose: Teach the basic principles of pharmacology and pharmacokinetics. Provide the basis for extrapolation of biological kinetics to a wide variety of other xenobiotics encountered in toxicology, biology, and research.

Grading:

≥90% - A 80-90% - B 70-80% - C
60-70% - D ≤60% - F

Problem sets	50 points
Paper Review	50 points
Exam 1	100 points
Exam 2	100 points
Exam 3	100 points
Final Exam	200 points
	600 points

Introductory Pharmacology and Pharmacokinetics (3 credits)

Course Introduction and History of pharmacology
Structure of membranes
Physicochemical factors in the diffusion of drugs
Chapters 1, 2, 7, 8
Physicochemical factors in the diffusion of drugs (cont.)
Alimentary absorption of drugs
Chapters 9, 10
Alimentary absorption of drugs (cont.)
Drug absorption from other sites
Protein binding
Chapter 6
Drug distribution and Physiologic and chemical barriers to drug distribution,
Transplacental drug movement
Chapters 6, 11
Biotransformation of drugs - Types, requirement for elimination, bioactivation,
and locations of metabolism, etc.
Chapters 2, 13
Cytochromal biotransformation
Microsomal oxidative reactions
Nonmicrosomal oxidative reactions
Nonoxidative pathways of biotransformation

EXAM #1 (class periods Jan. to Feb.)

Conjugation of drugs and metabolites
Types and synthesis of conjugation precursors
Conjugation of drugs and metabolites - continued
Induction and inhibition of metabolic pathways
Species and genetic differences in drug metabolism
Principles of drug elimination
Chapter 12
Principles of drug elimination - continued
Urinary elimination of drugs
Chapter 12
Biliary elimination of drugs
Chapter 13
Other routes of drug elimination
Introduction to pharmacokinetics - terminology
Introduction to pharmacokinetic modeling
Chapters 2, 3

One compartment model
Chapter 4
EXAM #2 (class periods Feb. to March)

Multi-compartment models
Chapter 5
Multi-compartment models - continued
IV Infusion
Chapter 14
(spring break)
Physiologic modeling
Chapter 20
Noncompartmental analyses
Homework problem set review
Pharmacokinetics of multiple dosage regimens
Chapter 15
Pharmacokinetics of multiple dosage regimens - continued
Computer based pharmacokinetic modeling
Pharmacokinetics and pharmacodynamics in the presence of disease
Chapters 17, 18
Species differences in pharmacokinetics

EXAM #3 (class periods March to April)

Drug interactions
Molecular mechanisms of drug activity
Chapter 16
Molecular mechanisms of drug activity - continued
Mechanisms of drug effects - receptor interactions
Allergic reactions to drugs
Applications of pharmacology and pharmacokinetics
Introduction to the variation in drug classifications
Paper reviews
Paper reviews

Final Examination (cumulative, with emphasis on class periods since April)