

PHR-Pharmacology

PHR 611. Physiological Principles of Pharmacology & Toxicology. 3 Hours.

This course will provide a broad but rigorous overview of physiological principles of pharmacology & toxicology. The course includes five separate “modules”, each taught by faculty of UAB Dept. Pharmacology & Toxicology. Each module has separate review session(s) and exams. In addition, each module will have small group problem-based learning (PBL) sessions (see below). There will be one exam specific for each module. At the end of the course, students will be assigned a drug from a pre-assigned list and discuss its pharmacology and toxicology, in the form of a PPT presentation. Students will be graded for their performance on exams, completing PBL assessments, student presentation, and participation in live PBL sessions.

PHR 612. Systems Physiology and Pharmacology I. 3 Hours.

This course will introduce the student to the use, mechanism of action and physiological properties of major families of drugs that affect the cardiovascular system, autonomic nervous system (ANS) and central nervous system (CNS). Lectures will provide an overview of nervous system / cardiovascular physiology and pathophysiology that results from various diseases, disorders and injuries, the drugs used to treat these conditions and their mechanisms of action. Both classical drugs and newer classes of drugs will be discussed for both their therapeutic value and also their use in different research settings. This course will be taught using a combination of traditional didactic lectures and student participation through discussion of seminal research papers and presentations.

PHR 613. Systems Physiology and Pharmacology II. 3 Hours.

This course will introduce drug use, mechanism of action and physiological properties of major drug families, with a focus on specific organ systems (endocrine, gastrointestinal and renal systems). In addition, this course will also cover specific classes of drugs for cancer treatment specifically related to the organ systems covered in the course. This course is divided into three “modules”. Each module has its own exam. In addition, there are graded student presentations at the end of the semester, topics of discussion to be determined.

PHR 614. Drug Discovery and Development. 3 Hours.

The course will provide an overview of the drug discovery and development process. Topics will include (among others): Target identification and validation, High-Throughput Screening, Hit discovery, Lead optimization, Preclinical testing, Safety requirements, Clinical trials, IND, NDA, Patents, and Federal regulations. The course will highlight multidisciplinary nature of drug discovery and the roles of biologists, medicinal chemists, pharmacologists, regulatory agencies, and investors in the process. Real-life case stories highlighting successful and unsuccessful drug development examples will be introduced for discussions, as well as some current examples of early stage biotech startups.

PHR 615. Pharmacokinetics and Biopharmaceutics. 3 Hours.

Pharmacokinetics is the study of the time-course of drugs in physiological systems. This includes the fate of administered drugs in relation to time starting with absorption, through distribution, and elimination. Pharmacokinetics is fundamental to the understanding of observed drug effects and responses. This course is divided into three sections that are assessed independently. The first section explores the mathematical principles of pharmacokinetics using the compartmental and noncompartmental models of analysis. The second section evaluates the roles of biopharmaceutical factors in the pharmacokinetics of drugs. The last section introduces the students to hands-on pharmacokinetics analysis and modeling using an industry-standard software package.

PHR 696. Special Topics. 1-3 Hour.

Special Topics in Pharmacology.

PHR 701. Adv Prin Pharm-Sys&Pharmacok 1. 3 Hours.

PHR 702. Adv Prin Pharm-Sys&Pharmacok 2. 3 Hours.

PHR 706. Special Topics in Pharmacology. 3 Hours.

PHR 715. Pharmacokinetics and Biopharmaceutics. 2 Hours.

Pharmacokinetics is the study of the time-course of drugs in physiological systems. This includes the fate of administered drugs in relation to time starting with absorption, through distribution, and elimination. Pharmacokinetics is fundamental to the understanding of observed drug effects and responses. This course is divided into three sections that are assessed independently. The first section explores the mathematical principles of pharmacokinetics using the compartmental and noncompartmental models of analysis. The second section evaluates the roles of biopharmaceutical factors in the pharmacokinetics of drugs. The last section introduces the students to hands-on pharmacokinetics analysis and modeling using an industry-standard software package.

PHR 720. Laboratory Rotation in Pharmacology. 1-12 Hour.

PHR 735. Nucleotide Metabolism and Chemotherapy. 3 Hours.

Principles, characteristics and therapeutics of nucleotide metabolism. This course is designed for second year and above graduate students.

PHR 744. Protein Mass Spectrometry. 3 Hours.

PHR 752. Pharmacokinetic Analysis. 1 Hour.

The course will provide a detailed introduction to the analysis of pharmacokinetic data preferably generated as part of the student's research. Descriptions of the use of appropriate analytical programs and the interpretation of pharmacokinetic data will be the major focus of this course.

PHR 754. Model Sys for Drug Discovery. 2 Hours.

This course will focus on the use of different genetically tractable model systems and their roles in drug discovery and drug development. The course will discuss the properties, benefits and deficiencies of major model systems used in drug discovery including yeast, zebrafish, xenographs, and genetically modified mouse strains.

PHR 755. Translational Pharmacology and Drug Development. 2 Hours.

Translational pharmacology covers the principles and practice of drug development from the laboratory (bench) to the patient (bedside). This course provides an overview of the processes involved in drug development. It familiarizes the student with the drug discovery and development process including types of clinical trials, regulatory requirements and results interpretations.

PHR 790. Pharmacology Journal Club. 1 Hour.

Pharmacology Journal Club.

PHR 798. Doctoral Level Non-Dissertation Research. 1-12 Hour.

PHR 799. Doctoral Level Dissertation Research. 1-12 Hour.

Prerequisites: GAC Z