

Medical Pharmacology (PHARM)

Courses

PHARM 241. Advanced Topics in Pharmacology. 2 Units.

Application of pharmacological principles in disease therapy. Advanced pharmacological mechanisms and in-depth study of drug action. Discussion of several major drug classes/therapeutic strategies: molecular mechanisms of action, physiological consequences of administration, and clinical use.

PHARM 251. Experimental Pharmacology. 4 Units.

Introduction to the concepts and techniques used in pharmacological science. Molecular biology, quantitative and biochemical pharmacology, fluorescent probes, behavior, genetics, animal handling, anatomical and receptor binding analysis, methods for ion channel study, the absorption, distribution, metabolism and elimination of drugs.

PHARM 254. Introduction to Pharmacology. 4 Units.

Ligand-gated ion channels, G protein-coupled receptors, receptor tyrosine kinases, ligand-regulated transcription factors, their signaling mechanisms, trafficking, macromolecular complexes, and physiological responses.

PHARM 255. Neuropharmacology. 2 Units.

Mechanisms underlying chemical signaling processes in the brain and periphery. Molecular biology, signal transduction, transmitter synthesis, and inactivation of major neurotransmitter systems. Drugs that act on these major neurotransmitters.

Restriction: Graduate students only.

PHARM 256. Experimental Design for Pharmacologists. 1 Unit.

Population and sample statistics, hypothesis testing, analysis of variance, nonparametric statistics, experimental design, power, and the use of statistical computer software.

Prerequisite: PHARM 251

PHARM 257. Ethics in Research. 1 Unit.

Ethical conduct in research including data handling, authorship, conflict of interest, animal rights, handling of misconduct.

Prerequisite: PHARM 299

Repeatability: May be taken for credit 2 times.

PHARM 270. Applied Pharmacology . 3 Units.

One week (five days, 40 hours) in-residence course offered on the UCI campus. Introduction to pharmacological techniques and current research problems; includes laboratory demonstrations and research seminars.

Restriction: Pharmacology Majors only.

PHARM 271. Principles of Pharmacology . 3 Units.

Principles of pharmacology: pharmacodynamics, pharmacokinetics, pharmacogenetics, drug interactions, and toxicity.

Restriction: Pharmacology Majors only.

PHARM 272. Receptors and Drug Targets . 3 Units.

Molecular basis of drug-receptor interaction. Receptor properties including gene and protein structure, signaling mechanisms, trafficking and physiological effects: G-protein linked receptors, ligand-gated ion channels, receptor tyrosine kinases, nuclear receptors, and ligand regulated transcription factors.

Restriction: Pharmacology Majors only.

PHARM 274. Research Techniques in Pharmacology. 3 Units.

Experimental techniques and model systems used in pharmacological research. Receptor analysis, bioassay, molecular biology, in vitro pharmacology, biochemical pharmacology, imaging, electrophysiology, in vivo pharmacology, disease models.

Restriction: Pharmacology Majors only.

PHARM 276. Experimental Design and Data Analysis . 3 Units.

Experimental design, data analysis and interpretation. Population and sample statistics, hypothesis testing, analysis of variance, nonparametric statistics, and power calculations.

Restriction: Pharmacology Majors only.

PHARM 277. Ethics in Scientific Research. 3 Units.

Ethical conduct in research including data handling, authorship, conflict of interest, animal rights, and handling of misconduct.

Restriction: Pharmacology Majors only.

PHARM 278. Concepts in Drug Discovery. 3 Units.

Critical steps involved in discovery and optimization of a new drug. Target selection, relationship of molecular structure to pharmacological activities, screening methods, strategies to identify lead compounds, and preclinical characterization necessary for development of the drug for clinical trials.

Restriction: Pharmacology Majors only.

PHARM 279. Special Topics in Pharmacology. 3 Units.

Topics of current interest in pharmacology; discussion of recent research publications.

Restriction: Pharmacology Majors only.

PHARM 280. Master's Project in Pharmacology. 3 Units.

Capstone research paper on topic of interest in pharmacology.

Restriction: Pharmacology Majors only.

PHARM 281. Neuropharmacology . 3 Units.

Autonomic and central nervous system pharmacology, including major drug classes and therapeutic uses. Mechanisms underlying chemical signaling processes in the brain and peripheral nervous system, including neurotransmitter synthesis, inactivation, and receptor action.

Restriction: Pharmacology Majors only.

PHARM 282. Behavioral Pharmacology. 3 Units.

Pharmacology of integrative function and behavior. Drug treatment of pain. Mechanisms of reward, addiction, and drugs of abuse.

Restriction: Pharmacology Majors only.

PHARM 283. Cardiovascular Pharmacology. 3 Units.

Basic understanding of drugs used in the prevention and treatment of cardiovascular disease. Mechanisms of action, clinical and adverse effects.

Restriction: Pharmacology Majors only.

PHARM 284. Endocrine, Respiratory, and Gastrointestinal Pharmacology . 3 Units.

Basic understanding of drugs used in endocrine, respiratory, and gastrointestinal conditions, including hormone replacement, contraceptives, and drugs for diabetes, asthma, obesity, ulcer, and gastric reflux. Mechanisms of drug action, clinical and adverse effects.

Restriction: Pharmacology Majors only.

PHARM 298. Seminar. 2 Units.

Presentation and discussion of current problems and methods in teaching and research in pharmacology, toxicology, and therapeutics.

Repeatability: May be repeated for credit unlimited times.

Restriction: Graduate students only.

PHARM 299. Research. 1-12 Units.

Independent research with Pharmacology and Toxicology faculty.

Repeatability: May be repeated for credit unlimited times.

Restriction: Graduate students only.