### Pharmacology Courses (Neuroscience and Pharmacology) (PCOL)

This is a list of all pharmacology courses. For more information, see Neuroscience and Pharmacology.

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**PCOL:2220 Drug Use and Abuse 3 s.h.**
- Principles of drug action, toxicity, sedatives, stimulants, hallucinogens, narcotics, over-the-counter agents, antibiotics, and oral contraceptives. Offered spring semesters.
- Requirements: closed to students enrolled in the Pharm.D. program. GE: Natural Sciences without Lab.

**PCOL:3101 Pharmacology I: A Drug’s Fantastic Journey 2-3 s.h.**
- Introduction to basic pharmacological principles by following a drug’s journey from its site of administration to its site of elimination; common mechanisms by which drugs affect the body and mechanisms underlying drug actions on two primary body systems—nervous and cardiovascular; structured learning environment bolstered by highly interactive application sessions where students apply course material via collaborative work on problem sets/activities; for students interested in medicine, pharmacy, research, and industry.
- Prerequisites: CHEM:1110 and BIOL:1411. Recommendations: additional higher-level biology and chemistry courses helpful.

**PCOL:3102 Pharmacology II: Mechanisms of Drug Action 3 s.h.**
- Expansion of basic pharmacological concepts and further exploration of how they are applied to define a drug’s actions on the body; students continue their exploration of the body by discussing various disorders including neuropsychiatric and immune disorders, cancer, diabetes, and microbial infections in conjunction with current treatments; structured learning environment bolstered by highly interactive discussion sessions where students learn to apply course material via collaborative work on problem sets/activities; for students interested in medicine, pharmacy, research, and industry.
- Prerequisites: PCOL:3101. Recommendations: additional higher-level courses in biology and chemistry helpful.

**PCOL:4130 Drug Mechanisms and Actions 3 s.h.**
- Introduction to principles of pharmacology, pharmacologic actions of drugs. Offered spring semesters.
- Requirements: undergraduate biochemistry and physiology courses.

**PCOL:4199 Undergraduate Research in Neuroscience and Pharmacology arr.**
- Experimental research under faculty supervision in department laboratories.

**PCOL:5130 Fundamentals of Pharmacology 3 s.h.**
- Basic pharmacological principles underlying drug absorption, distribution, and metabolism; how these processes determine drug dosing; drug receptor interactions and their quantitation; impact of genetic variation on the actions and metabolism of drugs; mechanisms of neurotransmission focusing on synthesis, release, actions, and degradation; central nervous system (CNS) pathways for major neurotransmitters; disease states involving various abnormal neurotransmitter function.
- Offered spring semesters.

**PCOL:5135 Principles of Pharmacology 1 s.h.**
- Basic pharmacological principles underlying drug absorption, drug distribution throughout the body, drug metabolism, and drug elimination; how these processes determine drug dosing and the means by which dosing parameters are characterized; drug receptor interactions and their quantitation.
- Offered spring semesters.

**PCOL:5136 Pharmacogenetics and Pharmacogenomics 1 s.h.**
- Impact of genetic variation on the actions and metabolism of drugs; database search techniques to identify variants.
- Offered spring semesters. Prerequisites: PCOL:5135.
- Recommendations: undergraduate or graduate biochemistry and/or genetics.

**PCOL:5137 Neurotransmitters 1 s.h.**
- Mechanisms of neurotransmission focusing on mechanisms of synthesis, regulation of release, mechanisms of action, means of degradation, and CNS pathways for major neurotransmitters; disease states involving various neurotransmitter systems.
- Offered spring semesters.

**PCOL:5204 Basic Biostatistics and Experimental Design 1 s.h.**
- Overview of theory of experimental design and data analysis in biological sciences; types of analyses available for common types of data generated in biomedical sciences; review of statistical methods used in published studies; cursory coverage of mathematical computations involved in various analytical tests.
- Offered fall semesters.

**PCOL:6015 Topics in Pharmacology and Neuroscience 1 s.h.**
- Recent advances in pharmacology, neuropharmacology, developmental neurobiology, neuroendocrinology, and related neurosciences.

**PCOL:6020 Topics in Pharmacogenomics 1 s.h.**
- Recent advances in pharmacogenomics, pharmacogenetics, and related genetic fields.
- Offered fall semesters.

**PCOL:6025 Topics in Cell Signaling and Cancer 1 s.h.**
- Recent advances in cell signaling mechanisms, mechanisms of cancer, cancer biology, and related sciences.
- Offered spring semesters.

**PCOL:6030 Topics in Cardiovascular Pharmacology 1 s.h.**
- Recent advances in cardiovascular pharmacology, metabolic pharmacology, and related sciences.
- Offered spring semesters.

**PCOL:6080 Pharmacology Seminar 1 s.h.**

**PCOL:6090 Graduate Research in Pharmacology arr.**

**PCOL:6099 Special Topics in Pharmacology arr.**

**PCOL:6203 Pharmacology for Graduate Students 6 s.h.**
- Principles of pharmacology, pharmacologic actions of drugs, correlation with therapeutic uses.
- Offered fall semesters. Prerequisites: BIOC:5243 and MPB:5153.
PCOL:6204 Pharmacology for Health Sciences: Nurse Anesthetist 
5 s.h.
Principles of pharmacology; pharmacologic actions of drugs, correlation with therapeutic uses. Offered fall semesters. Prerequisites: ACB:6000 or NURS:6000. Requirements: enrollment in Anesthesia Nursing Program.

PCOL:6207 Ion Channel Pharmacology 
1 s.h.
Heuristic, semiquantitative approach to concepts in ion channel physiology and pharmacology; up-to-date physical principles, classification, and structure/function relationships for major voltage-gated ion channels that facilitate application of abstract concepts to physiological, pharmacological, and general biological problems. Offered spring semesters.

PCOL:6208 G Proteins and G Protein-Coupled Receptors 
1 s.h.
Structure and function of small molecular weight and G proteins; heteromeric G proteins and G protein-coupled receptors. Offered spring semesters of even years. Prerequisites: BIOC:5243. Recommendations: MMED:6225.

PCOL:6209 Steroid Receptor Signaling 
1 s.h.
Structure-function relationship and genomic and nongenomic actions of the steroid hormone receptor family; basis for actions of novel new ligands on these receptors. Offered spring semesters of even years. Same as MPB:6209, NSCI:6209.

PCOL:6210 Receptors and Cell Signaling 
3 s.h.
Mechanisms of signaling by growth factors, cytokines and related molecules; principles of ion channel physiology and pharmacology; structure-function relationships of small molecular weight and heteromeric G proteins; G protein-coupled receptors; genomic and nongenomic actions of intracellular receptors; basis for actions of novel new ligands on intracellular receptors. Offered spring semesters.

PCOL:6250 Advanced Problem Solving in Pharmacological Sciences 
1 s.h.
Discussion of methodologies, strategies, and approaches commonly used to solve pharmacological sciences problems; use of interpersonal problem-solving skills to develop experimental study plans for solving contemporary scientific problems in pharmacology. Offered fall and spring semesters.