

**826. Laboratory Animal Pathology**  
Spring. 4(3-3) Graduate status and approval of department. Interdepartmental with and administered by Laboratory Animal Resources.

Macro and microscopic studies on the diseases of laboratory animals with special emphasis on naturally-occurring diseases which might interfere with the interpretation of experimental results.

**899. Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**910. Biology of Disease**  
Fall. 3(2-3) Approval of department. Primarily for students in the biological sciences.

Basic morphologic changes in disease with emphasis on the related physiologic pathology. Laboratory includes relevant problems in post-mortem diagnosis.

**980. Histopathologic Diagnosis**  
Fall, Winter, Spring, Summer. 3(0-9) May re-enroll for a maximum of 6 credits. 803, 820.

Trimming, histopathologic examination, description, diagnosis and reporting of specimens from biopsy and necropsy.

**990. Advanced Correlative Pathology**  
Fall, Winter, Spring, Summer. 5(0-15) May re-enroll for a maximum of 15 credits. Approval of department.

Experience in morphologic and clinical pathology and correlation of these with the clinical aspects of disease.

**999. Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

## PHARMACOLOGY PHM

College of Human Medicine  
College of Osteopathic Medicine  
College of Veterinary Medicine

**350. Introductory Human Pharmacology**  
Spring. 3(3-0) PSL 332 or concurrently; or approval of department.

Survey of pharmacology including general principles, central nervous system drugs, autonomic nervous system drugs, cardiovascular and renal drugs, endocrine drugs, anti-infectives, poisoning therapy, and other basic related topics.

**430. Drug Abuse**  
Fall, Spring. 4(4-0) Juniors or approval of department. Biology and chemistry recommended.

Actions, mechanism of action, toxicity and uses of drugs of abuse. Sociological and psychological aspects of drug abuse and the legal aspects of the sale and distribution of drugs are considered.

**480. Special Problems**  
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 5 credits. Approval of department.

**520A. Principles of Pharmacology**  
(520.) Fall. 4(4-0) PSL 500B, 500C. Primarily for students of Veterinary Medicine. Pharmacology principles, including absorption, distribution, biotransformation, drug antagonism, receptor theory and pharmacogenetics; literature data analysis; adverse drug reactions. Chemotherapy including anti-neoplastic, anti-viral and anti-microbial agents; endocrine and emergency therapies.

**520B. Principles of Pharmacology**  
Winter. 4(4-0) PSL 500A, or 801, 802, 803. Primarily for students of Human and Osteopathic Medicine.

Pharmacology principles, including absorption, distribution, biotransformation, drug antagonism, receptor theory and pharmacogenetics; literature data analysis; adverse drug reactions. Chemotherapy including anti-neoplastic, anti-viral and anti-microbial agents; endocrine and emergency therapies.

**520C. Principles of Pharmacology—Independent Study**  
Summer. 4(1-9) Approval of department. Primarily for students of Human and Osteopathic Medicine.

Independent study of pharmacology principles, including absorption, distribution, biotransformation, drug antagonism, receptor theory and pharmacogenetics; literature data analysis; adverse drug reactions. Chemotherapy including anti-neoplastic, anti-viral and anti-microbial agents; endocrine and emergency therapies.

**521A. Pharmacodynamics**  
(521.) Winter 5(4-4) 520A. Primarily for students of Veterinary Medicine.

Pharmacology of the nervous systems (central, peripheral and autonomic); cardiovascular, renal, gastrointestinal drugs.

**521B. Pharmacodynamics**  
Spring. 4(4-0) 520B. Primarily for students of Human and Osteopathic Medicine.

Pharmacology of the nervous systems (central, peripheral and autonomic); cardiovascular, renal, gastrointestinal drugs.

**521C. Pharmacodynamics—Independent Study**  
Summer. 5(1-11) 520B or 520C. Primarily for students of Human and Osteopathic Medicine.

Independent study of pharmacology of the nervous systems (central, peripheral and autonomic); cardiovascular, renal, gastrointestinal drugs.

**522. Toxicology**  
Spring. 3(3-0) 521A or 521B or 521C.

Toxicology of economic and household poisons, noxious gases and vapors, minerals solvents, pesticides and pollutants.

**810. Synaptic Transmission**  
Winter of odd-numbered years. 4(4-0) Approval of department.

Chemical and electrical aspects of the transmission of nervous impulses at synaptic and neuroeffector junctions and the influences of drugs upon these processes.

**811. Organ System Pharmacology**  
Fall of odd-numbered years. 4(3-3) 521A or 521B or 521C and approval of department.

Current concepts and recent advances in the areas of cardiovascular, renal and syncytial smooth muscle pharmacology.

**812. Advanced Principles of Pharmacology and Toxicology**  
Spring of odd-numbered years. 4(4-0) 522 and approval of department.

Kinetics of drug absorption, elimination and metabolism; drug-receptor interaction. Principles of drug toxicity in evaluation and treatment; includes problems of modern toxicology, i.e., teratogenesis, mutagenesis, carcinogenesis.

**870. Problems**  
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 5 credits. Approval of the department. Limited amounts of individual work on selected research problems.

**899. Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**910. Seminar**  
Fall, Winter, Spring. 1(1-0) May re-enroll for a maximum of 3 credits.

**980. Problems**  
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 5 credits. Approval of department. Limited amounts of individual work on selected research problems.

**999. Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

## PHILOSOPHY PHL

### College of Arts and Letters

Each of the courses 101, 102, 103 is an independent gateway to an area of philosophy. Together they provide a comprehensive introduction to philosophical inquiry through contact with philosophical issues.

**101. Introduction to Philosophy: Ethics and Value**  
Fall, Winter, Spring, Summer. 3(3-0) Students may not receive credit for both 101 and 330.

Moral responsibility, praise and blame, good and evil, justice, law and morality, individual liberty and collective authority and contemporary moral issues are typical problems.

**102. Introduction to Philosophy: Epistemology and Metaphysics**  
Fall, Winter, Spring, Summer. 3(3-0)

Skepticism and certainty, existence, matter and mind, God, space and time, knowledge and belief, perception, personal identity, causality, and free-will are typical problems.

**103. Introduction to Philosophy: Logic**  
Fall, Winter, Spring, Summer. 3(3-0)

Deductive and inductive reasoning and such topics as rational argumentation, fallacies, definition, meaning, truth and evidence.

**200H. Honors Work**  
Fall, Winter, Spring. 1 to 16 credits. Approval of department.