

853 Advanced Systemic Pathology
Spring of odd years. 4(3-2) R: Approval of department.

Pathological aspects of the nervous, endocrine, cardiovascular, respiratory, urinary, genital, musculoskeletal, integumentary and special sense systems.

854 Advanced Clinical Pathology
Summer. 3(3-0) R: Approval of department.
Hematology including anemias, leukocyte responses and hemostasis. Cytology including inflammation, infection and neoplasia. Evaluation of clinical chemistry data.

855 Essentials of Scientific Communication
Fall of odd years. 2(2-0) R: Approval of department.

Preparation, editing, and review of research manuscripts and grants. Critique of oral presentations. Illustrations of research data and thesis preparation. Philosophy and methods of research.

856 Concepts in Toxicologic Pathology
Summer of odd years. 2(2-0) R: Approval of department.

Pathologic changes in tissues of animals used in toxicologic studies. Clinical pathologic assessments. Gross, histologic, and ultrastructural changes in organ systems.

857 Correlative Diagnostic Pathology
Fall, Spring, Summer. 3(0-6) R: Approval of department.

Diagnosis of animal diseases by necropsy, biopsy, or clinical pathology. Correlation of diagnostic test results with history, laboratory data and morphologic findings. Compiled and formal presentation of findings.

858 Pathology of Avian Diseases
Spring of even years. 2(2-0) R: Approval of department.

An overview of disease and pathology affecting domestic poultry, pet birds, and wild birds.

859 Avian Histopathology Laboratory
Spring of even years. 1(0-2) R: Approval of department.

Recognition and description of microscopic lesions of avian diseases.

860 Clinical Laboratory Diagnosis of Infectious Diseases
Spring of even years. 2(2-0) Interdepartmental with Medical Technology. Administered by Medical Technology Program. RB: (MMG 451 and MMG 464)

Laboratory techniques for diagnosing infectious diseases in humans. Emphasis on differential diagnosis and correlation of microbiological results with serology, hematology, and clinical chemistry.

890 Problems in Veterinary Pathology
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.

Faculty supervised work on an experimental, theoretical or applied problem in veterinary pathology.

891 Problems in Pathology
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.

Faculty supervised work on an experimental, theoretical or applied problem in pathology.

892 Pathology Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. R: Approval of department.

Presentation and discussion of current topics in pathology by departmental graduate students, faculty or outside speakers.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Approval of department.

Master's thesis research.

901 Investigating the Lung
Fall of even years. 2(2-0) Interdepartmental with Large Animal Clinical Sciences; Physiology. Administered by Department of Large Animal Clinical Sciences. R: Open only to graduate students.

Integrative biology of the lung; structure and function; molecular, cellular, and organ responses to injury.

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Admission to doctoral program in Pathology. Doctoral dissertation research.

PEDIATRICS PED

Department of Pediatrics and Human Development College of Osteopathic Medicine

590 Special Problems in Pediatrics
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 48 credits in all enrollments for this course. R: Open only to graduate-professional students in the College of Osteopathic Medicine. Approval of department.

Experimental, theoretical, or applied problems under faculty direction.

600 Pediatrics Clerkship
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate-professional students in the colleges of Osteopathic Medicine and Human Medicine upon completion of Units I and II.

Practical clinical exposure in the area of pediatrics.

602 Primary Care Ambulatory Clerkship
Fall, Spring, Summer. 1 to 36 credits. A student may earn a maximum of 36 credits in all enrollments for this course. Interdepartmental with Osteopathic Medicine; Internal Medicine; Osteopathic Surgical Specialties; Psychiatry; Family and Community Medicine. Administered by Department of Osteopathic Medicine. RB: Successful completion of the preclerkship requirements in College of Osteopathic Medicine Units I and II.

A 24-week ambulatory care continuity experience involving 12 weeks in a multidisciplinary environment (family medicine, pediatrics, and internal medicine), 4 weeks in family medicine and 8 weeks in specialty areas (internal medicine, surgery, pediatrics, and obstetrics and gynecology). Didactic sessions are scheduled concurrently.

619 Ambulatory Care Clerkship
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 15 credits in all enrollments for this course. Interdepartmental with Family Practice; Medicine. Administered by Department of Family Practice. RB: (FMP 602) R: Open only to graduate-professional students in College of Human Medicine.

Continuous and comprehensive patient care under supervision of appropriate physicians.

620 Directed Studies
Fall, Spring, Summer. 1 to 30 credits. A student may earn a maximum of 30 credits in all enrollments for this course. RB: (PED 600) R: Open only to graduate-professional students in the College of Osteopathic Medicine. Approval of department.

Study in general or specialty pediatrics.

PEDIATRICS AND HUMAN DEVELOPMENT PHD

Department of Pediatrics and Human Development College of Human Medicine

523 Genetics for Medical Practice
Summer. 1(1-0) Interdepartmental with Biochemistry and Molecular Biology. R: Graduate-professional students in colleges of Human and Osteopathic Medicine. SA: BCH 523

Basic principles of genetics for medical students.

526 Molecular Biology and Medical Genetics
Fall. 2 credits. Interdepartmental with Biochemistry and Molecular Biology. Administered by Department of Biochemistry and Molecular Biology. R: Restricted to students enrolled in the M.D. (CHM) or D.O. (COM) programs. SA: BCH 526 Not open to students with credit in PHD 523.

Basic principles of human medical genetics; storage and expression of genetic information; transmission of genetic information to progeny.

591 Special Problems in Human Development
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Graduate-professional students in colleges of Human and Osteopathic Medicine.

Work under the direction of a faculty member on an experimental, theoretical, or applied problem.

600 Pediatric Specialty Clerkship
Fall, Spring, Summer. 6 to 24 credits. A student may earn a maximum of 24 credits in all enrollments for this course. R: Open only to graduate-professional students in College of Human Medicine. Completion of preclinical CHM curriculum.

Multidisciplinary approach to children and their families in a health care setting. Integrated biological, behavioral, and clinical sciences in assessing and planning children's health care needs.

Pediatrics and Human Development—PHD

601 Human Development and Pediatric Sub-specialties
Fall, Spring, Summer. 6 to 24 credits. A student may earn a maximum of 24 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Experience in clinical, behavioral, and basic sciences related to pediatrics and human development.

602 Ambulatory Pediatrics
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Clinical experience in outpatient and community setting involving ongoing child health care.

603 Pediatric Infectious Diseases Clerkship
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Office, clinic, and inpatient experiences in evaluating and managing pediatric patients with infectious diseases.

604 Neonatology
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Clinical experiences: modern neonatal techniques and care patterns for neonates including follow up.

605 Pediatric Cardiology Clerkship
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Office, clinic, and hospital experience in diagnostic and therapeutic pediatric cardiology including special diagnostic procedures.

606 Pediatric Endocrinology and Metabolism Clerkship
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Clinic and hospital experience in evaluating patients with endocrine and metabolic disorders.

607 Pediatric Hematology and Oncology
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate professional students in College of Human Medicine.

Clinical experience in evaluating and managing pediatric patients with common hematologic and oncologic disorders

608 Pediatric Pulmonary Disease Clerkship
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (PHD 600) R: Open only to graduate-professional students in College of Human Medicine.

Inpatient and outpatient clinical experiences in evaluating and managing pediatric patients with pulmonary problems. Diagnostic procedures, clinically relevant physiology, current research.

633 Extended Clinical Experience
Fall, Spring, Summer. 6(6-0) P:M: (PHD 600)

Based in community hospitals and ambulatory sites, this is a 4 week clinical experience emphasizing interviewing skills, history, physical exam, problem solving and therapy.

635 Core Competencies I
Fall. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine; Family Practice; Medicine. Administered by Human Medicine. RB: (FMP 602) R: Open only to graduate-professional students in College of Human Medicine.

A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

637 Core Competencies III
Spring, Summer. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine; Family Practice; Medicine; Obstetrics, Gynecology and Reproductive Biology; Surgery. Administered by Human Medicine. RB: (FMP 602) R: Open only to graduate-professional students in College of Human Medicine.

A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

PHARMACOLOGY AND TOXICOLOGY PHM

Department of Pharmacology and Toxicology
College of Human Medicine
College of Osteopathic Medicine
College of Veterinary Medicine

350 Introductory Human Pharmacology
Spring. 3(3-0) P:M: (PSL 250) or (PSL 431 and PSL 432) R: Not open to freshmen.

General principles of pharmacology. Central and autonomic nervous systems. Cardiovascular and renal drugs. Chemotherapy. Anti-infective drugs and endocrine agents.

430 Drug Abuse
Fall of odd years. 3(3-0) R: Not open to freshmen and sophomores.

Pharmacology, physiology, and neuroscience related to the pharmacodynamics of drugs of abuse.

450 Introduction to Chemical Toxicology
Spring. 3(3-0) P:M: (BS 110 or LBS 144) and (BS 111 or LBS 145) and (CEM 251) R: Not open to freshmen or sophomores.

Mammalian toxicology. Disposition of chemicals in the body, detoxication, elimination, and mechanisms of toxicity in major organ systems. Selected toxic agents.

480 Special Problems
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Approval of department.

Individual work on selected research problems.

556 Veterinary Pharmacology
Fall. 5(5-0) R: Completion of semester 2 of the graduate professional program in the College of Veterinary Medicine.

Drug absorption, disposition, biotransformation, excretion, pharmacokinetics. Pharmacologic agents of the autonomic nervous, cardiovascular, renal, central nervous, endocrine, and gastrointestinal systems.

557 Veterinary Toxicology
Spring. 2(2-0) R: Completion of semester 3 of the graduate professional program in the College of Veterinary Medicine.

Determinants of toxic responses, analytical toxicology, genetic toxicology, and toxin management. Diagnosis, prevention, and treatment of common toxicoses.

563 Medical Pharmacology
Summer. 3(3-0) R: Graduate-professional students in colleges of Human and Osteopathic Medicine.

General principles of pharmacology and selected drugs. Rational drug therapy.

658 Research Problems in Pharmacology and Toxicology
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Completion of 4 semesters of the graduate-professional program in the College of Veterinary Medicine. Approval of department.

Selected research problems in pharmacology or toxicology.

804 Molecular and Developmental Neurobiology
Fall. 3(3-0) Interdepartmental with Neuroscience; Psychology; Pathology; Zoology. Administered by Department of Neuroscience. RB: Bachelor's degree in a Biological Science or Psychology. R: Open only to graduate students in the Neuroscience major.

Nervous system specific gene transcription and translation. Maturation, degeneration, plasticity and repair in the nervous system.

806 Advanced Neuroscience Techniques Laboratory
Summer. 3(0-9) Interdepartmental with Neuroscience; Psychology; Radiology; Physical Medicine and Rehabilitation. Administered by Department of Neuroscience. P:M: (NEU 804 or concurrently) RB: (PHM 827 and ANT 839 and PSY 811) R: Open only to doctoral students in the Neuroscience major.

Methods of neuroscience research and the underlying principles on which these methods are based.

810 Synaptic Transmission
Spring of odd years. 3(3-0) R: Approval of department.

Chemical and electrical aspects of nerve impulse transmission at synaptic and neuroeffector junctions. Influence of drugs.

813 Cardiovascular Pharmacology
Spring of even years. 3(3-0) R: Approval of department.

Cardiovascular signal transduction and control in normal and pathophysiological states.