855. Pathology Laboratory
Fall, Spring, odd-numbered years. 3(3-0)
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.

856. Pathology Laboratory
Fall, Spring, even-numbered years. 3(3-0)
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, odd-numbered years. 4 credits.
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
Fall, Spring, even-numbered years. 2(2-0)
C: Pathology students must take PTH 559 concurrently.
R: Approval of department.
An overview of disease and pathology affecting domestic poultry, pet birds, and wild birds.

859. Avian Histopathology Laboratory
Fall, Spring, even-numbered years. 1 credit.
C: Pathology students must take PTH 559 concurrently.
R: Approval of department.
Recognition and description of microscopic lesions of avian diseases.

860. Clinical Laboratory Diagnostics of Infectious Diseases
Fall, Spring, even-numbered years. 2(2-0) Interdepartmental with Medical Technology. Administered by Medical Technology.
P: BCH 462, MIC 491, MTC 494.
Laboratory techniques for diagnosing infectious diseases in humans. Emphasis on differential diagnosis and correlation of microbiological results with serology, hematology, and clinical chemistry.

861. Advanced General Pathology
Fall, even-numbered years. 3(3-0)
P: PTH 552 concurrently. R: Approval of department.
Fundamental concepts of cell injury, inflammation, and oncogenesis. Mechanisms of disease.

862. Advanced General Pathology Laboratory
Fall, even-numbered years. 1 credit.
P: PTH 551 concurrently.
Histopathologic and ultrastructural study of general morphologic patterns of inflammation cell injury and neoplasia.

863. Advanced Systemic Pathology
Spring of odd-numbered years. 4(3-2)
R: Approval of department.
Pathological aspects of the nervous, endocrine, cardiovascular, respiratory, urinary, genital, musculoskeletal, integumentary and special sense systems.

864. Advanced Clinical Pathology
Spring of even-numbered years. 3(3-0)
P: PTH 540, PTH 552, PTH 609, PTH 651. R: Approval of department.
Hematology including anemias, leukocyte responses and hemostasis. Clinical chemistry including tests to evaluate organs.

865. Proseminar
Fall, odd-numbered years. 2(2-0)
R: Approval of department.
Preparation, editing, and review of research manuscript and grants. Critique of oral presentations. Illustrations of research data and thesis preparation. Philosophy and methods of research.
### Courses

**601. 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 Veterinary Medicine.  
Completeness of preclinical CVM curriculum is prerequisite.  
Multidisciplinary approach to children and their families in a health care setting. Integrated biologic, behavioral, and clinical sciences in assessing and planning children's health care needs.

**602. 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.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Experience in clinical, behavioral, and basic sciences related to pediatrics and human development.

**603. Ambulatory Pediatrics**  
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.  
P: PHD 604. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Clinical experience in outpatient and community setting involving ongoing child health care.

**604. 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.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Office, clinic, and inpatient experiences in evaluating and managing pediatric patients with infectious diseases.

**605. Neonatology**  
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Clinical experience modern neonatal techniques and care patterns for neonates including follow up.

**606. 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.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Office, clinic, and hospital experience in diagnostic and therapeutic pediatric cardiology including special diagnostic procedures.

**607. 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.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Clinic and hospital experience in evaluating patients with endocrine and metabolic disorders.

**608. 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.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Clinical experience in evaluating and managing pediatric patients with common hematologic and oncologic disorders.

**609. 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.  
P: PHD 600. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Inpatient and outpatient clinical experiences in evaluating and managing pediatric patients with pulmonary problems. Diagnostic procedures, clinically relevant physiology, current research.

**610. Core Competencies I**  
Spring, Summer. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
Interdepartmental with Human Medicine, Medicine, and Family Practice. Administered by Human Medicine.  
A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

**611. Core Competencies II**  
Spring, Summer. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  
Interdepartmental with Human Medicine, Medicine, Family Practice, Surgery, and Obstetrics. Gynecology and Reproductive Biology. Administered by Human Medicine.  
P: 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.

**612. Advanced Comprehensiveness Care**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course.  
Interdepartmental with Human Medicine, Medicine, Family Practice, Surgery, and Obstetrics. Gynecology and Reproductive Biology. Administered by Human Medicine.  
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine.  
Clinical experience in community-oriented primary care. Emphasis on urban and rural underserved populations.

**PHARMACOLOGY AND TOXICOLOGY**

**PHM 350. Introductory Human Pharmacology**  
Fall, Spring. 3(3-0)  
P: PSL 250. R: Not open to freshmen.  

**430. Drug Abuse**  
Fall of odd-numbered 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: BS 110, BS 111, CEM 251. R: Not open to freshmen and sophomores.  
Mammalian toxicology. Disposition of chemicals in the body. Detoxication, elimination, and mechanisms of toxicity in major organ systems. Selected toxic agents.

**460. 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. Not open to students with credit in PHM 350 or PHM 450.  
Individual work on selected research problems.

**556. Veterinary Pharmacology**  
Spring. 3(3-0)  
R: Completion of 2 semesters of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in PHM 554 or PHM 556.  
Drug absorption, disposition, biotransformation, excretion, pharmacokinetics. Pharmacologic agents of the autonomic nervous, cardiovascular, renal, central nervous, endocrine, and gastrointestinal systems.

**557. Veterinary Toxicology**  
Spring. 3(3-0)  
R: Completion of 3 semesters of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in PHM 554. Determinants of toxic responses, analytical toxicology, genetic toxicology, and toxic management. Diagnosis, prevention, and treatment of common toxicoses.

**561. 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.

**568. Research Problems in Pharmacology and Toxicology**  
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 9 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.

**810. Synaptic Transmission**  
Spring of odd-numbered years. 3(3-0)  
R: Approval of department.  
Chemical and electrical aspects of nerve impulse transmission at synaptic and neuroeffector junctions. Influence of drugs.

**811. Cardiovascular Pharmacology**  
Spring of even-numbered years. 3(3-0)  
R: Approval of department.  
Cardiovascular signal transduction and control in normal and pathophysiologic states.

**814. Advanced Principles of Toxicology**  
Spring of even-numbered years. 3(3-0)  
R: PHM 519.  
Biochemical, molecular and physiological mechanisms of toxicity. Responses of target organs to chemical insult. Mechanisms of autotransformation and carcinogenesis.

**815. Concepts in Tumorogenesis**  
Fall. 2(2-0)  
P: BCH 462, PSL 492, PSL 460. R: Approval of department.  
Examination and discussion of literature in tumorogenesis.

**817. Advanced Neurotoxicology**  
Summer of odd-numbered years. 3(3-0)  
R: Interdepartmental with Animal Science.  
P: PHM 814 or BIO 827.  
Types of damage occurring in the nervous system. Unique forms of neurotoxicity associated with specific groups of neurotoxicants.