136. Concepts in Molecular Biology
Spring or odd-numbered years. 2(2-0) Interdepartmental with Medical Technology. Administered by Medical Technology.
P: One course in Biochemistry or concurrently. Techniques and theorems of molecular biology, nucleic acid synthesis and isolation, enzymatic digestion and modification, electrophoresis, hybridization, amplification, library construction, and cloning.

840. Advanced Hemostasis
Fall of odd-numbered years. 2(2-0) Interdepartmental with Medical Technology. Administered by Medical Technology. P: BCII 469, MT 422. Physiology, pathophysiology, and laboratory evaluation of hemostatic disorders.

851. Advanced General Pathology
Fall of even-numbered years. 3(3-0) P: PTH 652 concurrently. R: Approval of department. Fundamental concepts of cell injury, inflammation, and oncogenesis. Mechanisms of disease.

852. Advanced General Pathology Laboratory
Fall of even-numbered years. 1(0-2) P: PTH 851 concurrently. Histopathologic and ultrastructural study of general morphologic patterns of inflammation cell injury and neoplasm.

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

854. Advanced Clinical Pathology
Spring of even-numbered years. 3(3-0) P: PTH 540, PTH 652, PTH 849, PTH 851. R: Approval of department. Hematology including anemia, leukocyte responses and hemostasis. Clinical chemistry including tests to evaluate organs.

855. Proseminar
Fall of odd-numbered 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. Pathology Seminar
Summer of 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. 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-numbered years. 2(2-0) C: Pathology students must take PTH 659. 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-numbered years. 1(0-2) C: Pathology students must take PTH 588. R: Approval of department. Recognition and description of microscopic lesions of avian diseases.

860. Clinical Laboratory Diagnosis of Infectious Diseases
Spring of even-numbered years. 2(2-0) Interdepartmental with Medical Technology. Administered by Medical Technology. P: MIC 451, MIC 461. Laboratory techniques for diagnosing infectious diseases in humans. Emphasis on differential diagnosis and correlation of morphological results with etiology, hematology, and clinical chemistry.

861. 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.

862. 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.

863. Pathology Seminar
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department. Preparation and discussion of current literature and problems in pathology by departmental graduate students, faculty or outside speakers.

864. 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.

901. Investigating the Lung
Fall of even-numbered years. 3(3-0) Interdepartmental with Large Animal Clinical Sciences and Physiology. Administered by Large Animal Clinical Sciences. R: Open only to M.S. and Ph.D. students in Large Animal Clinical Sciences, Small Animal Clinical Sciences, Physiology, and Pathology. Approval of department. Classic and current concepts of respiratory structure and function in health and disease. Mechanisms of lung injury.

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

PEDIATRICS AND HUMAN DEVELOPMENT

Department of Pediatrics and Human Development
College of Human Medicine

523. Genetics for Medical Practice
Summer. 1(1-0) Interdepartmental with Biochemistry. R: Graduate professional students in colleges of Human and Osteopathic Medicine. Basic principles of genetics for medical students.

524. Genetics Clinic
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. P: PDI 523. R: Graduate professional students in colleges of Human and Osteopathic Medicine. Role of genetics in health care delivery under the direction of a faculty member.

559. Special Problems in Pediatrics
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.
P: 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. P: PHD 600. R: Open only to graduate-professional students in College of Human Medicine. Clinical experience in outpatient and community settings 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. P: 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. P: 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. P: 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. P: 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. P: 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. P: 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.

625. 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, Medicine, and Family Practice. Administered by Human Medicine. P: PMP 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.

626. Core Competencies II
Spring, 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. P: PMP 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.

627. 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, Medicine, and Family Practice. Administered by Human Medicine. P: PMP 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.

640. Advanced Comprehensive 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: PMP 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

400. 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 560 or PHM 430. Individual work on selected research problems.

556. Veterinary Pharmacology
Fall. 5(5-0) 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 555. 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(2-0) 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 response, analytical toxicology, genetic toxicology, and toxin management. Diagnosis, prevention, and treatment of common toxicoses.

563. Medical Pharmacology
Fall, Spring, Summer. 3(3-0) R: Graduate-professional students in College of Human Medicine and Osteopathic Medicine. General principles of pharmacology and selected drugs. Rational drug therapy.

568. 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: Approval of department. Not open to students with credit in PHM 554 or PHM 555. Individual work on 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 neurotransmitter junctions. Influence of drugs.

813. Cardiac Pharmacology
Spring of even-numbered years. 3(3-0) P: PHM 250. R: Open only to graduate students. Effects of drugs on normal physiological and biochemical processes in cardiac cells.

814. Advanced Principles of Toxicology
Spring of even-numbered years. 3(3-0) P: PHM 813. Biochemical, molecular and physiological mechanisms of toxicology. Response of major organ systems to chemical insult. Mechanisms of mutagenesis and carcinogenesis.

815. Concepts in Tumorigenesis
Spring of odd-numbered years. 2(2-0) P: BCH 462, PSL 432, PSL 460. R: Approval of department. Examination and discussion of literature in tumorigenesis.