851. Advanced General Pathology
Fall of even-numbered years. 3(3-0)
P: PTH 852 concurrently. R: Approval of department.
Fundamental concepts of cell injury, inflammation, and oncogenesis. Mechanisms of disease.
QA: PTH 806

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.
QA: PTH 806L

853. Advanced Systemic Pathology
Spring of even-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.
QA: PTH 802, PTH 803, PTH 807

854. Advanced Clinical Pathology
Spring of odd-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.

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.
QA: PTH 805

856. Pathotoxicology
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.
QA: PTH 818

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. Compilated and formal presentation of findings.
QA: PTH 808, PTH 810

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.
QA: PTH 800

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.
QA: PTH 801

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.

QA: PTH 899

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.

QA: PTH 999

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.
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: PHD 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.

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. 12 credits.
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.

601. Human Development and Pediatric Sub-specialties
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.
Experience in clinical, behavioral, and basic sciences related to pediatrics and human development.
Temporary approval effective from Fall Semester 1992 through Summer Semester 1994.
QP: PHD 600

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 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.
P: PHD 600. R: Open only to graduate-professional students in College of Human Medicine.
Combines office, clinic, and inpatient experiences in evaluation and managing pediatric patients with infectious diseases.
QA: PHD 611

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.
QP: PHD 600

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: Grad 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.

PEDIATRICS PED

Department of Pediatrics
College of Osteopathic Medicine

580. Health Professionals' Role in the Treatment of Substance Abuse
Spring. 1(1-0)
R: Open only to graduate and graduate-professional students in the colleges of Human Medicine, Nursing, and Osteopathic Medicine or approval of department.
Practical knowledge base for recognizing and dealing with individuals affected by substance abuse.
QA: PED 580

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.
QA: PED 590

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.
QA: PED 600

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.
P: PED 600. R: Open only to graduate-professional students in the College of Osteopathic Medicine. Approval of department.
Study in general or specialty pediatrics.
QA: PED 620

PHARMACOLOGY AND TOXICOLOGY PHM

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

350. *Introductory Human Pharmacology*
Fall, Spring. 3(3-0)
P: PSL 250. 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.
QA: PHM 350

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.
QA: PHM 430

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.
QA: PHM 450

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. Not open to students with credit in PHM 350 or PHM 430.
Individual work on selected research problems.
QP: PHM 350, PHM 430 QA: PHM 480

554. *Veterinary Pharmacology and Toxicology I*
Fall. 3(3-0)
R: Completion of the first year of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in PHM 556.
Drug absorption, distribution, biotransformation, elimination, receptor theory and pharmacogenetics. Chemical toxicity. Autonomic nervous system, cardiovascular and renal pharmacology.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.
QA: PHM 554

555. *Veterinary Pharmacology and Toxicology II*
Spring. 4(4-0)
R: Completion of the first year of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in PHM 556.
Endocrine, autocoid and central nervous system pharmacology. Chemotherapy. Antimicrobials, antihelminthics, and antineoplastics.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.
QA: PHM 555

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. 2(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 594.
Determinants of toxic responses, analytical toxicology, genetic toxicology, and toxin management. Diagnosis, prevention, and treatment of common toxicoses.
QA: PHM 594

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.

594. *Veterinary Toxicology*
Spring. 3(3-0)
R: Completion of the second year of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in PHM 557.
Pharmacological basis and pathological features of animal diseases caused by common toxic chemicals. Clinical manifestations, diagnosis, prevention, and treatment.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1993.
QA: PHM 594

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.
QP: PHM 554, PHM 555, PHM 594

810. *Synaptic Transmission*
Spring of even-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.
QA: PHM 810

813. *Cardiac Pharmacology*
Spring of odd-numbered years. 3(3-0)
P: PHM 820. R: Open only to graduate students. Approval of department.
Effects of drugs on normal physiological and biochemical processes in cardiac cells.
QA: PHM 813

814. *Advanced Principles of Toxicology*
Spring of odd-numbered years. 3(3-0)
P: PHM 819.
Biochemical, molecular and physiological mechanisms of toxicology. Responses of major organ systems to chemical insult. Mechanisms of mutagenesis and carcinogenesis.
QA: PHM 814

815. *Concepts in Tumorigenesis*
Spring of even-numbered years. 2(2-0)
P: BCH 462, PSL 432, PSL 460. R: Approval of department.
Examination and discussion of literature in tumorigenesis.
QP: PSL 433, BCH 453 QA: PHM 815

819. *Principle of Drug-Tissue Interactions*
Summer. 5(5-0)
R: Open only to graduate students. Approval of department.
General principles relevant to the interaction of chemicals with biological systems.
QA: PHM 819

820. *Drug Actions, Effects and Uses*
Fall. 5(5-0)
P: PHM 819. R: Open only to graduate students. Approval of department.
Major principles of physiological and biochemical actions of major drugs.
QA: PHM 820, PHM 821

870. *Research Rotation*
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to first year graduate students in Pharmacology and Toxicology. Approval of department.
Individual work on selected research problems.
QA: PHM 870

899. *Master's Thesis Research*
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to graduate students in Pharmacology and Toxicology. Approval of department.

QA: PHM 899

910. *Seminar*
Fall, Spring. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course.
R: Open only to graduate students. Approval of department.
Discussion of recent topics in pharmacology and toxicology by faculty or invited outside speakers. Students research reports.
QA: PHM 910

980. *Problems*
Fall, Spring, Summer. 2 to 5 credits. A student may earn a maximum of 20 credits in all enrollments for this course.
R: Open only to graduate students. Approval of department.
Limited work in selected research projects.
QA: PHM 980

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: Open only to graduate students in Pharmacology and Toxicology. Approval of department.

QA: PHM 999

PHILOSOPHY PHL

Department of Philosophy
College of Arts and Letters

130. *Logic and Reasoning*
Fall, Spring. 3(3-0)
R: Not open to students with credit in PHL 330.
Deductive and inductive reasoning. Topics such as rational argumentation, fallacies, definition, meaning, truth and evidence. Techniques for critical reading and thinking.
QA: PHL 103

200. *Introduction to Philosophy*
Fall, Spring. 3(3-0)
Theories of knowledge, values, and reality. Topics such as objectivity, relativism and cultural diversity, moral responsibility, aesthetic values, the self, existence of God, free will, minds and machines.
QA: PHL 101, PHL 102, PHL 330

210. *History of Western Philosophy: Ancient and Medieval*
Fall. 3(3-0)
Greek philosophy with emphasis on Plato and Aristotle; Roman philosophy; and medieval philosophy.
QA: PHL 211