

- 608. Pathology Clerkship**  
Fall, Winter, Spring, Summer. 3 to 17 credits. May reenroll for a maximum of 17 credits. Grade P in all courses offered in terms 1 through 8.  
Anatomic and clinical pathology, with emphasis on clinical-pathological correlations. Conducted in the pathology departments of affiliated hospitals.
- 651. Veterinary Clinical Pathology Clerkship**  
Fall, Winter, Spring, Summer. 4 credits. Satisfactory completion of term 8 of the professional veterinary curriculum, approval of department.  
Concepts in laboratory interpretation and diagnosis.
- 652. Veterinary Necropsy Clerkship**  
Fall, Winter, Spring, Summer. 4 credits. Satisfactory completion of term 8 of the professional veterinary curriculum, approval of department.  
Supervised necropsy and interpretation of findings.
- 656. Problems in Veterinary Necropsy**  
Fall, Winter, Spring, Summer. 4 credits. PTH 652, approval of department.  
Problems related to necropsy and interpretation of findings.
- 667. Laboratory Animal Medicine Clerkship**  
(SSM 667.) Fall, Winter, Spring, Summer. 4 credits. Satisfactory completion of term 8 of the professional veterinary curriculum, approval of department.  
Supervised laboratory animal management, medicine and surgery.
- 800. Problems in Pathology**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.  
Elective work for students in veterinary medicine interested in pathology as a speciality, or in the special pathology of diseases of a particular class or species, and for graduate minors and majors interested in pathological techniques or in non-thesis research.
- 801. Pathology Seminar**  
Fall, Winter, Spring, Summer. 1(1-0) May reenroll for a maximum of 3 credits for M.S. candidates and 6 credits for Ph.D. candidates. Approval of department.  
Seminar required of all majors in pathology.
- 802. Advanced Histopathology**  
Fall. 5(6-0) Approval of department.  
A relatively advanced and comprehensive study in the histopathologic aspects of systemic and special pathology; independent study in the field of pathogenesis and microscopic pathology.
- 803. Advanced Histopathology**  
Winter. 5(6-0) PTH 802 and approval of department.  
Continuation of PTH 802.
- 805. Pathology Proseminar**  
Fall. 2(2-0) Approval of department.  
Philosophy and methods of research; theses and other research reports; literature review; illustration of research data; practical assignments.

- 810. Postmortem Diagnosis**  
Fall, Spring. 3(0-9) May reenroll for a maximum of 6 credits. Approval of department. Required of majors.  
Instruction and practice in diagnosis of animal diseases by means of necropsy and other laboratory techniques. Emphasis will be placed upon correlation and interpretation of gross and microscopic lesions and results of other tests.
- 811. Advanced Clinical Pathology**  
Spring of even-numbered years. 3(1-6) Approval of department.  
Application of standard and newer techniques and instrumentations in hematology, biochemistry, parasitology, etc., to the diagnosis of disease.
- 812. Hematology**  
Winter. 5(3-4) PTH 408 or approval of department.  
Pathology of diseases of blood and an analysis of diagnostic laboratory procedures.
- 820. Oncology**  
Spring. 3(6-0) Approval of department.  
A study of benign and malignant neoplasms with emphasis on gross and microscopic characteristics and diagnosis.
- 826. Laboratory Animal Pathology**  
Winter of even-numbered years. 4(4-0) Medical degrees, approval of instructor.  
Macro and microscopic studies on the diseases of laboratory animals.
- 899. Master's Thesis Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
- 980. Histopathologic Diagnosis**  
Fall, Winter, Spring, Summer. 3(0-9) May reenroll for a maximum of 6 credits. PTH 803, PTH 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 reenroll 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. Doctoral Dissertation Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

- 600. Pediatrics Clerkship**  
(O M 652.) Fall, Winter, Spring, Summer. 6 or 8 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.  
Practical clinical exposure in the area of pediatrics. Program developed to achieve proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management and therapy.
- 620. Directed Studies**  
Fall, Winter, Spring, Summer. 2 to 24 credits. PED 600 or approval of department.  
Study in general or specialty pediatrics.

**PEDIATRICS AND HUMAN DEVELOPMENT PHD**

(Name changed July 1, 1979. Formerly Department of Human Development.)  
**College of Human Medicine**

- 520. Genetics Clinic**  
Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits.  
Students will interview and examine patients with inheritable disorders, perform related laboratory diagnostic procedures, and participate in genetic counseling conferences and discussions.
- 531. Medical Genetics**  
Fall. 1(1-0) Admission to a college of medicine or approval of department.  
Basic genetic principles and their application to clinical medicine, prenatal genetic diagnosis, exercises in genetic counseling and the importance of relevant laboratory tests.
- 532. Phenomena of Development**  
Fall. 5(5-0) PHD 531 or approval of department.  
Normal psychological and physical development of the human including intellectual, social, emotional and endocrinological growth from infancy through adolescence. Clinical examples highlight deviations from the normal course of development.
- 590. Special Problems in Human Development**  
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 12 credits. Human Medicine students or approval of department.  
Each student will work under direction of a staff member on an experimental, theoretical or applied problem.

**PEDIATRICS PED**

(Established effective January 1, 1979.)  
**College of Osteopathic Medicine**

- 590. Special Problems in Pediatrics**  
Fall, Winter, Spring, Summer. 1 to 6 credits. Approval of department.  
Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

- 607. Ambulatory Care Clerkship**  
Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. H M 602. Interdepartmental with the departments of Community Health Science, Family Practice, and Medicine. Administered by the Department of Family Practice.  
Outpatient experience, lasting an equivalent of 48 half days over a period of six months or more, emphasizing continuous and comprehensive patient care under the supervision of appropriate physicians.

**Descriptions – Pediatrics and Human Development  
of  
Courses**

- 608. Pediatric Specialty Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 43 credits. H M 602; primary clerkship.  
Clinical experience with pediatric patients under the direction of members of the faculty of the Department of Human Development and community pediatricians. Fall, Saginaw. Winter, Lansing. Spring, Grand Rapids. Summer, Flint.
- 609. Human Development and Pediatric Sub-Specialties**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.  
Elected experiences in selected clinical and basic sciences related to pediatrics and human development.

- 610. Ambulatory Pediatrics**  
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. PHD 608.  
Clinical experience in outpatient and community settings involving ongoing child health care including chronic medical illnesses and common behavioral problems.

- 611. Infectious Diseases**  
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. PHD 608.  
Combined office or clinic and inpatient experience in evaluating and managing pediatric patients with infectious diseases.

- 612. Neonatology**  
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. PHD 608.  
Clinical experience involving modern neonatal techniques and care patterns for the sick neonate.

- 613. Pediatric Cardiology**  
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. PHD 608.  
Office, clinic and hospital experience in diagnostic and therapeutic pediatric cardiology including special diagnostic procedures.

- 614. Pediatric Endocrinology and Metabolism**  
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. PHD 608.  
Clinic and hospital experience in evaluating patients with endocrine and metabolic disorders.

- 615. Pediatric Hematology and Oncology**  
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. PHD 608.  
Clinical experience in evaluating and managing pediatric patients with common hematologic and oncologic disorders.

- 350. Introductory Human Pharmacology**  
Spring. 3(3-0) PSL 432 or PSL 241 or concurrently; or approval of department.  
General principles; central nervous system, autonomic nervous system, cardiovascular and renal drugs; chemotherapy; and other selected basic topics.

- 430. Drug Abuse**  
Fall of odd-numbered years. 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. 1 to 3 credits. May reenroll for a maximum of 9 credits. Approval of department.  
Limited amounts of individual work on selected research problems for undergraduate students.

- 503. Cell Biology**  
Fall. 5(5-0) Admission to the College of Human Medicine. Interdepartmental with the departments of Biochemistry, Microbiology and Public Health, and Physiology. Administered by the Department of Microbiology and Public Health.  
Principles of cell biology for medical students.

- 520A. Principles of Pharmacology**  
Fall. 4(4-0) PSL 500B, PSL 500C.  
Drug absorption, distribution, biotransformation, elimination, receptor theory and pharmacogenetics; chemical toxicity; autonomic nervous system, cardiovascular and renal pharmacology.

- 520B. Principles of Pharmacology**  
Winter. 4(4-0) PSL 500A; BCH 501.  
Drug absorption, distribution, biotransformation, elimination, antagonism; receptor theory and pharmacogenetics. Chemotherapy: antineoplastic, antiviral and antimicrobial agents. Toxicology and emergency therapies. Pharmacology related to the autonomic nervous system.

- 521A. Pharmacodynamics**  
Winter. 5(4-2) PHM 520A. Primarily for students of Veterinary Medicine.  
Endocrine, autocoid and central nervous system pharmacology; chemotherapy: antimicrobials, antihelminthics, antineoplastics.

- 521B. Pharmacodynamics**  
Spring. 4(4-0) PHM 520B or PHM 520A.  
Pharmacology of the central and peripheral nervous systems. Cardiovascular, renal and gastrointestinal drugs. Endocrine and autoacid pharmacology.

- 810. Synaptic Transmission**  
Winter of odd-numbered years. 4(4-0) Approval of department.  
Chemical and electrical aspects of nervous impulse transmission at synaptic and neuroeffector junctions and influences of drugs upon these processes. Intrinsic neuronal circuitry; reticular formation; thalamus; neocortex; cerebellum.

- 811. Advanced Renal and Autocoid Pharmacology**  
Spring of even-numbered years. 4(4-0) PHM 521A or PHM 521B and approval of department.  
Advanced concepts and current topics in renal and autocoid pharmacology.

- 812. Advanced Principles of Pharmacology**  
Fall. 2(2-0) PHM 521A or PHM 521B, approval of department.  
Pharmacodynamics, drug-receptor interactions, computer modeling, drug metabolism.

- 813. Cardiac Pharmacology**  
Winter of even-numbered years. 4(4-0) PHM 520A, PHM 521A or PHM 520B, PHM 521B; PSL 801, PSL 802, PSL 803; and approval of department.  
Effects of drugs on normal physiological and biochemical processes in cardiac cells are studied. Emphasis is placed on mechanisms of drug action.

- 814. Advanced Principles of Toxicology**  
Spring of even-numbered years. 4(4-0) PHM 812.  
Current biochemical and physiological mechanisms of toxicity on major organ systems. Mechanisms of mutagenicity, carcinogenicity and teratology.

- 870. Problems**  
Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.  
Limited amounts of individual work on selected research problems for first year graduate students in the Department of Pharmacology and Toxicology.

- 899. Master's Thesis Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.  
Individual work on research problems for the master's degree in pharmacology.

- 910. Seminar**  
Fall, Winter, Spring. 1(1-0) May reenroll for a maximum of 3 credits. Approval of department.  
Discussion of recent topics on pharmacology by departmental or outside speakers, or reporting of research efforts by graduate students of the Department of Pharmacology and Toxicology.

- 980. Problems**  
Fall, Winter, Spring, Summer. 2 to 5 credits. May reenroll for a maximum of 20 credits. Approval of department.  
Limited work on selected research problems.

- 999. Doctoral Dissertation Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.  
Individual work on research problems for the doctoral degree in pharmacology.

**PHILOSOPHY PHL**

- College of Arts and Letters**  
Each of the courses PHL 101, PHL 102, PHL 103 is an independent gateway to a major area of philosophy. Together they provide a comprehensive introduction to philosophical inquiry.  
The courses may be taken independently and in any order.

**PHARMACOLOGY AND TOXICOLOGY PHM**

(Name change effective July 1, 1978. Formerly Department of Pharmacology)  
**College of Human Medicine  
College of Osteopathic Medicine  
College of Veterinary Medicine**