PHR 222 DRUGS, MEDICINES, AND SOCIETY. (3)
The course is designed to enable the university graduate to be sufficiently sophisticated in his understanding of the physiological and behavioral effects of medicines, environmental toxicants, and psychoactive chemicals so that he may make informed decisions regarding their use in his life, home and community. This course provides such information in the context of drug development, standardization, distribution, control, use and misuse in a modern society. (Note: It is felt that this course might be of particular interest to freshmen.)

PHR 510 MODERN METHODS IN PHARMACEUTICAL ANALYSIS. (5)
A course which deals with the application of modern analytical methods, primarily instrumental methods, in the determination of the strength, purity, and quality of drugs and pharmaceuticals. Laboratory exercises include analysis of raw materials and finished dosage forms. Lecture, three hours; laboratory, four hours. Prereq: CHE 226.

PHR 520 SPECIAL TOPICS IN PHARMACY LAW. (2)
Discussion of the legal framework and special legal issues in pharmacy practice. Topics will include application of antitrust laws to pharmacy, patent and trademark issues relevant to pharmacy, legal issues related to prescription drug insurance programs, professional liability and legislative issues such as drug product selection. Prereq: PHR 831.

PHR 530 RADIOPHARMACEUTICS. (3)

PHR 545 STERILE PARENTERALS AND DEVICES. (2-3)
The course will describe the fundamental concepts, principles and techniques involved in the characterization, development, evaluation and preparation of sterile products. Lecture, two credits; lecture with laboratory, three credits. Prereq: PHR 846 and PHR 825 or equivalent and consent of instructor.

#PHR 564 INTRODUCTION TO FDA AND THE DRUG DEVELOPMENT PROCESS. (2)
A broad overview of the regulatory and scientific principles employed in pharmaceutical development including the regulatory framework and pre-clinical experimentation necessary to initiate a first time in human (Phase 1) trial through the objectives, principles, study designs, methods and reporting to evaluate a new pharmaceutical in a human. Students will develop an understanding of how certain forms of translational, or “bench to bedside” research must be organized and executed. Prereq: Enrollment in the Colleges of Pharmacy, Dentistry, Law, Medicine or Public Health, the NIH K-30 program, a junior or senior undergraduate, or consent of instructor.

PHR 612 QUANTITATIVE PHARMACODYNAMICS: PHARMACOKINETICS. (3)
Quantitative treatment of dynamics of drug absorption, distribution, metabolism and excretion, including development of both mathematical models and model-independent approaches for describing these processes. Prereq: PHR 802 (or equivalent), MA 114 and consent of instructor. (Same as PHA 612.)

#PHR 620 BIOSYNTHESIS OF NATURAL PRODUCTS. (3)
An overview of the biochemical pathways leading to compounds called natural products/secondary metabolites. Prereq: Two semesters of organic chemistry. (Same as BCH 620/PLS 642.)

PHR 622 ADVANCED BIOPHARMACEUTICS. (2)
An advanced treatment of the factors affecting drug availability from dosage forms and the influence of the route of administration and the dosage regimen on drug availability. Prereq: PHR 612.

PHR 630 PHARMACEUTICAL RATE PROCESSES. (3)
Kinetics of reactions of pharmaceutical interest; mechanisms of drug decomposition and theoretical approaches to stabilization and preservation; accelerated stability analysis. Prereq: MA 213, CHE 538, CHE 548 and PHR 631.

PHR 631 EQUILIBRIUM PHENOMENA IN PHARMACEUTICAL SYSTEMS. (3)
An advanced study in special topics of a physical chemical nature which are applicable to pharmacy, with special emphasis on physical properties and molecular structure, solubility, complexation and equilibria in solution. Prereq: Physical chemistry.
PHR 645 NEUROTOXICOLOGY. (2)
Multidisciplinary discussions of the major sites and mechanisms of drug/chemical-induced nervous system toxicity. Presentations by faculty and graduate students. Prereq: BCH 501 and 502, PGY 502 and PHA 522 or equivalent and consent of instructor. (Same as TOX 645.)

PHR 647 INTRODUCTION TO MOLECULAR PHARMACOTHERAPEUTICS. (3)
A discussion of the development of potential therapeutic entities using molecular biotechnology. Recent advances in the design and delivery of target-specific treatments such as special peptides, monoclonal antibodies and gene therapies will be the primary focus. Prereq: BCH 501 and 502, BCH 401G or equivalent or consent of instructor.

PHR 649 ADVANCED MOLECULAR PHARMACOLOGY. (2)
This course will provide in-depth coverage of the molecular pharmacology of growth factors, transcription factors, receptors, and ion channels. Emphasis will be placed on both the normal functions of these cell-signaling molecules and perturbations that result in several prevalent human diseases, including cancer, Alzheimer’s, diabetes, osteoporosis, and inherited human illnesses. Students will be introduced to experimental approaches to diagnosing and treating these illnesses in the light of our evolving knowledge of molecular pharmacology. Prereq: IBS 601-606 or consent of instructor. (Same as PHA/TOX 649.)

PHR 665 ETHICAL ISSUES IN CLINICAL RESEARCH. (3)
Based on NIH guidelines for Responsible Conduct of Research, this course will present ethical and regulatory guidelines for conducting clinical research. Prereq: Participation in curriculum leading to Graduate Certificate in Clinical Research Skills, or permission of instructor. (Same as CPH 665.)

PHR 748 MASTER’S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

PHR 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

PHR 760 TOPICS IN PHARMACEUTICAL SCIENCES. (1-4)
This course deals with emerging concepts in pharmaceutical sciences which are not being covered in other courses. May be repeated to a maximum of 10 hours. Prereq: Consent of instructor.

PHR 762 BIOORGANIC MECHANISMS. (3)
An in-depth discussion on the bioorganic chemistry aspects of the active sites of enzymes and drug receptors, the molecular basis of drug design, and principles of drug metabolism. Within these topics, the mode of action of some of the major coenzymes and drugs will be discussed from a mechanistic chemistry point of view. Prereq: CHE 538, CHE 633, BCH 501 or consent of instructor.

PHR 764 DRUG DEVELOPMENT REGULATION AND CLINICAL RESEARCH. (3)
A study of the pharmaceutical development process and its regulation, including a detailed examination of clinical research methodologies. Students will demonstrate their competence by developing a clinical trial protocol. Prereq: Enrollment in the Pharmaceutical Sciences graduate program or consent of instructor.

PHR 767 DISSERTATION RESIDENCY CREDIT. (2)
Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.

PHR 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.

PHR 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE. (0-12)
May be repeated indefinitely.
PHR 776 SEMINAR IN PHARMACEUTICAL SCIENCES I. (1)
Reports and discussion of pertinent research and literature in the pharmaceutical sciences. Required of all graduate students. Prereq: Graduate standing.

PHR 778 SEMINAR IN PHARMACEUTICAL SCIENCES II. (1)
Reports and discussion of pertinent research and literature in a disciplinary area of the pharmaceutical sciences. May be repeated to a maximum of eight credits. Prereq: Graduate standing.

PHR 780 SPECIAL PROBLEMS IN PHARMACEUTICAL SCIENCES. (1-6)
Selected problems of laboratory or literature nature in which a student pursues a topic of interest to him under the supervision of a faculty member particularly qualified in that area. May be repeated once. Prereq: Consent of instructor.

PHR 778 SEMINAR IN PHARMACEUTICAL SCIENCES II. (1)
Reports and discussion of pertinent research and literature in a disciplinary area of the pharmaceutical sciences. May be repeated to a maximum of eight credits. Prereq: Graduate standing.

PHR 790 RESEARCH IN PHARMACEUTICAL SCIENCES. (1-12)
Research work to be conducted in selected areas of pharmaceutical sciences. Prereq: Approval of student’s special committee and consent of instructor.

PHR 811 COMPUTER APPLICATIONS IN PHARMACY. (2)
A guide to the selection and use of computers in pharmaceutical practice. Descriptions of functions, cost-benefit considerations, hardware and software, capabilities of various systems, language, applications to patient profiles, inventory control and accounts are considered.

PHR 813 GERIATRIC PHARMACY. (3)
A course designed to educate students in the basic knowledge of attitudes and skills required to meet the pharmaceutical needs of the elderly. Topics include discussions of the aging process, physiological and psychological changes in the elderly, how these changes influence patient compliance and the responses to drug and nondrug treatments, monitoring drug use in long-term care facilities, and special community services available to the elderly. Prereq: PHR 849, 852, 853, 854 and 856 or permission of instructor. (Same as GRN 513.)

PHR 826 INTRODUCTION TO NUCLEAR PHARMACY. (3)
The subject matter in this course includes: an introduction to basic atomic structure, radioactivity, detection of radiation, interactions of radiation with matter, radiation safety, dosimetry, the major emphasis being placed on radiopharmaceuticals and nuclear medicine instrumentation. Prereq: PHR 806 and consent of instructor.

PHR 832 ADVANCED COMMUNITY PRACTICE MANAGEMENT. (2)
A study of the principles and methods unique to the management of a community pharmacy, building on previous foundations and focusing on the entrepreneurial aspects of management. Prereq: PHR 831 and consent of instructor.

PHR 833 ADVANCED INSTITUTIONAL PRACTICE MANAGEMENT. (2)
Application of management principles to institutional and group practices. Emphasis is on the acquisition, distribution and control of drugs by pharmacists in the institutional practice settings and the justification, establishment and evaluation of clinical pharmacy services. Prereq: PHR 831, PHR 848.

PHR 848 INSTITUTIONAL PRACTICE AND STERILE PRODUCTS. (4)
An introduction to the practice of pharmacy in institutional settings and clinics. Emphasis is placed on principles of parental drug preparation, home health care and the delivery of pharmaceutical services in group practices. Lecture with some laboratory experiences and demonstrations. Prereq: PHR 805; coreq: PHR 849.

PHR 849 DISPENSING PHARMACEUTICALS. (3)
A discussion of the principles of dispensing medications with emphasis on patient counseling, patient monitoring, drug interactions and physical-chemical incompatibilities involved in compounding. Lecture, two hours; laboratory, three hours. Prereq: PHR 806, PHR 830; coreq: PHR 848.
PHR 865 DISEASE PROCESSES I. (5)
An interdisciplinary course in which in-depth study of specific disease processes, especially the quantifiable, pathognomonic parameters permit the student to develop a unique understanding of the pathologic factors influencing clinical drug use. Prereq: PHR 849, 852, 853, 854 and 856.

PHR 866 APPLIED THERAPEUTICS I. (5)
An in-depth integration of patient factors including age, history, concurrent disease states, medications, allergies, renal and hepatic function, and drug product factors including bioavailability, pharmacokinetics, efficacy, toxicity, risk to benefit ratios, and cost in the application of drug therapy to specific patient situations. Also included are discussions of the prominent considerations relative to patient education about their disease and therapy. Prereq: PHR 849, 852, 853, 854 and 856.

PHR 867 DISEASE PROCESSES II. (4)
A continuation of PHR 865. Prereq: PHR 865.

PHR 868 APPLIED THERAPEUTICS II. (5)
A continuation of PHR 866, including a presentation of physical assessment techniques necessary for monitoring drug response. Prereq: PHR 866.

PHR 870 CLINICAL ORIENTATION CLERKSHIP. (8)
This course acquaints the student with the techniques and various considerations involved in the diagnosis and evaluation of disease states and their treatment. It affords the student opportunity to gain an appreciation of the scientific, social, emotional and psychological aspects of illness and provides the student with ability to work with other health professionals. Offered for letter grade credit only (A, B, C, D, E, I). Prereq: PHR 812, 848, 849, 850, 853, 854 and 856.

PHR 874 DRUG LITERATURE EVALUATION. (3)
This course apprises the student of the pharmacological and toxicological principles and techniques employed in the clinical evaluation of drugs and enables the student to use more effectively the clinical literature. Prereq: PHR 852, PHR 853, PHR 854 and PHR 856.

PHR 875 CLINICAL PHARMACOKINETICS. (4)
Application of pharmacokinetic principles to drug dosing on an individual patient basis, with emphasis on those drugs which have narrow therapeutic ranges or have unique pharmacokinetic or pharmacologic properties. Prereq: PHR 806 or consent of instructor.

PHR 881 PHARMACY PRACTICE EXTERNSHIP. (8)
This externship is designed to provide the student with a faculty-directed, integrated experience in the provision of pharmaceutical services in a variety of patient care settings under the supervision of selected pharmacy practitioners on a one-to-one basis of student to practitioner. This experience includes participation in traditional practice settings and may involve participating in new and innovative pharmacy practice models. The course consists of two four-week rotations which are full-time (not less than 40 hours per week) directed externship experiences. Offered on a pass/fail basis only. Prereq: PHR 849, 850, 853, 854, 856, permission of instructor, and minimum 2.0 pharmacy cumulative GPA.

PHR 886 PHARMACY PRACTICE CLERKSHIP. (4)
A structured set of rotations designed to provide clinical experience in the use of drugs for the treatment of diseases. Students will be assigned to a variety of patient care areas on a full-time basis under the supervision of a faculty preceptor. Emphasis is placed on the active participation of the student in the provision of contemporary pharmaceutical care in different environments. The experiences provide the opportunity to integrate material presented in previous courses and stress outcome oriented decision making in clinical situations regarding drug therapy. May be repeated to a maximum of 40 credits. Prereq: PHR 867, 868, 874, 875, minimum 2.0 pharmacy GPA, required immunizations.

PHR 892 CLINICAL DRUG COMMUNICATIONS. (1-5)
The course is designed as a natural continuation of PHR 874 and serves the specific purpose of providing instruction and experience of such a nature and quality as to promote the professional role of the pharmacist in the communication of clinical pharmacology data and therapeutics information. May be repeated to a maximum of 10 credits. Lecture, one hour; laboratory, four-16 hours.
PHR 895 INDEPENDENT PROBLEMS IN CLINICAL PHARMACY. (1-3)
Selected problems in patient care, drug information, pharmacy administration, and pharmaceutical technology as related to pharmaceutical services. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PHR 896 INDEPENDENT PROBLEMS IN PHARMACY. (1-3)
Selected problems pertaining to the various aspects of pharmacy which may include such problems as pharmaceutical procedures, pharmaceutical formulations, pharmaceutical history, and pharmaceutical economics. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

#PHR 910 INTRODUCTION TO PHARMACY PRACTICE. (3)
An introduction to the practice of pharmacy within the major practice settings. Includes an introduction to the profession and discussions of the pharmacist within the health care system, professional pharmacy organizations, models and sites of practice, postgraduate educational and career opportunities, an introduction to product compounding and administration, professionalism, and required community service experiences. Prereq: Admission to first year, College of Pharmacy.

PHR 911 PHYSIOLOGICAL BASIS FOR THERAPEUTICS I. (4)
Integrated concepts of human organ system functions with particular emphasis on the physiology of the central and autonomic nervous system, the cellular and molecular mechanisms of neurotransmission and transduction and the response of target issues. The course includes an introduction to the pathophysiology of each system and the pharmacodynamics of therapeutic agents as a framework for discussion. Variable mixtures of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 912 PHYSIOLOGICAL CHEMISTRY AND MOLECULAR BIOLOGY I. (3)
The first of a two course sequence covering integrated concepts of human biochemistry from a physiological viewpoint, functional group chemistry essential to biology, key structural and functional relationships of the biomolecules in living systems, energy metabolism emphasizing inter organ relationships and an in depth discussion of information storage and transfer. The course includes an introduction to common metabolic diseases and the therapeutic agents used in those diseases as a framework for discussion. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 913 PHARMACOLOGICAL BASIS OF THERAPEUTICS: ANTIBIOTICS. (3)
A study of the pathophysiology and microbiology of infectious diseases concentrating on the pharmacology of the therapeutic agents (antibiotics) used to treat those diseases, including discussions of their rational use. Variable mixture of lectures, discussions and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 914 BASIC PRINCIPLES OF PHARMACEUTICAL SCIENCE: PHARMACEUTICS AND BIOPHARMACEUTICS I. (3)
The first of a two course sequence in basic principles of Pharmaceutical Science concentrating on absorption, distribution, metabolism, excretion and bioavailability of drugs; and an introduction to dosage forms, oral drug delivery systems, drug solutions and drug solids, bioequivalence determinations and ratings, and official compendia. Variable mixtures of lectures, discussions and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 916 NONPRESCRIPTION PHARMACEUTICALS AND SUPPLIES I. (2)
A study of various nonprescription pharmaceuticals, medical and surgical supplies and appliances commonly found in ambulatory pharmacy practice sites, their rational use and therapeutic efficacy. Decision making skills for ambulatory patient triage are emphasized. The use of home remedies and their limitations in the treatment of minor ailments is considered. Variable mixture of lecture, discussions and independent study. Prereq: Admission to the first year, College of Pharmacy.

*PHR 919 PATIENT CARE LABORATORY I. (1)
An integration and application of the skills needed to fill the professional responsibilities of pharmacy practice as they relate to patient centered care and the patient care process, utilizing principles taught in the corequisite courses to provide the contextual framework for the skills considered. Prereq: Admission to the first year College of Pharmacy. Coreq: All concurrent PHR 91X series courses.
#PHR 920 COMMUNICATION AND BEHAVIOR IN PHARMACY PRACTICE. (3)
An introduction to the social and behavioral issues that impact health including their influence on the pharmacist-patient relationship and the ability of the pharmacist to provide patient care. Includes discussions of stress and stress coping, communication with patients and other health care professionals, cultural and religious influences on patient compliance and disease management, and required community service experiences. Prereq: PHR 910 and PHR 919.

PHR 921 PHYSIOLOGICAL BASIS FOR THERAPEUTICS II. (4)
A continuation of PHR 911 covering integrated concepts of human organ system functions with particular emphasis on the physiology of the cardiovascular, renal, pulmonary and endocrine systems. The course includes an introduction to the pathophysiology of each system and the pharmacodynamics of prototype therapeutic agents as a framework for discussion. Variable mixture of lecture, group discussions and independent study. Prereq: PHR 911 and admission to the first year, College of Pharmacy.

PHR 922 PHYSIOLOGICAL CHEMISTRY AND MOLECULAR BIOLOGY II. (3)
A continuation of PHR 912. Variable mixture of lectures, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy and PHR 912.

PHR 923 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: NUTRITION, HEALTH PROMOTIONS. (3)
Consideration of the role of the pharmacist in health promotion and disease prevention including both pharmacologic and non-pharmacologic methods. Major problems of nutrition and certain metabolic/chronic disorders for which nutrition plays a pivotal role will be addressed including hypertension, cancer, and eating disorders. In addition the pharmacology of drugs affecting the gastrointestinal tract and drugs used to treat common gastrointestinal problems are discussed. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 924 BASIC PRINCIPLES OF PHARMACEUTICAL SCIENCE: PHARMACEUTICS AND BIOPHARMACEUTICS II. (3)
The second of a two course sequence in the basic principles of Pharmaceutical Science concentrating on modified release oral dosage forms; modified release parenteral dosage forms; nasal, buccal, rectal, vaginal and ophthalmic delivery systems; aerosols and pulmonary delivery systems, and the drug development process. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 926 NONPRESCRIPTION PHARMACEUTICS AND SUPPLIES II. (2)
A continuation of PHR 916. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy and PHR 916.

*PHR 928 INTRODUCTORY PHARMACY PRACTICE EXPERIENCE I. (4)
An introductory practice experience designed to provide students a structured, supervised program of participation in the practice of pharmacy. Experiences may involve on-call and evening/weekend responsibilities. Offered on a pass/fail basis only. Laboratory, 40 or more hours per week. Prereq: Successful completion of required courses in the 920 series and consent of instructor.

*PHR 929 PATIENT CARE LABORATORY II. (1)

#PHR 930 LEGAL, ETHICAL, AND ACCESS ISSUES IN PHARMACY. (4)
The legal, ethical and access issues affecting the practice of pharmacy. Course includes community service experiences. Prereq: PHR 920.

PHR 931 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: NERVOUS SYSTEM. (5)
A study of human disease processes and rational pharmacotherapeutics relating to the autonomic, central and peripheral nervous system including a discussion of the factors influencing the development of substance dependence and the strategies for risk reduction. Emphasis is placed on the principles of pathophysiology, pharmacology, toxicology and therapeutics, the incorporation of these principles in the clinical application of modern drug therapy, and how these principles can be utilized in pharmacy practice. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.
PHR 932 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: IMMUNOLOGY AND BIOTECHNOLOGY. (3)
A study of the immune system, immunopathologies and select autoimmune diseases and their treatment. Includes a discussion of immunizations, immunology of cancer, neoplasias and an introduction to antineoplastic therapy. The course concludes with a discussion of biotechnology and its application to the production and use of pharmaceuticals, diagnostic agents and advanced therapies. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.

PHR 933 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: ENDOCRINE SYSTEMS. (3)
A study of the pathophysiology of the major disorders affecting the endocrine system concentrating on the pharmacology of the therapeutic agents used to treat those disorders, including discussions of the rational use of endocrine agents and their congeners in the treatment of non-endocrine diseases. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.

*PHR 939 PATIENT CARE LABORATORY III. (2)

#PHR 940 EVIDENCE BASE FOR PHARMACY PRACTICE. (4)
A discussion of the evidence base for pharmacy practice including sources of drug information, drug study design, applied data analysis, and biostatistics in the interpretation and critical analysis of biomedical literature with the purpose of developing evidence based care recommendations for a given patient or patient population. The course is implemented using a variety of educational methods including lectures, structured reading of biomedical literature, and practice in developing protocols to address various health-related research questions. Course includes community service experiences. Prereq: PHR 930.

PHR 944 BASIC PRINCIPLES OF MEDICINAL CHEMISTRY. (3)
The rational design of molecules to produce safe and effective therapeutic responses in humans; molecular changes in drug molecules that affect affinity and activity at drug receptors and influence the absorption, distribution, metabolism, excretion and stability of drugs; and the properties of drug molecules which are important in their formulation into drug products. Variable mixture of lecture, group discussion and independent study. Prerq: Admission to the second year, College of Pharmacy.

PHR 946 ADVANCED PHARMACOTHERAPY I. (5)
An advanced study of the pathology, pathophysiology and optimal treatment of common diseases. Through a series of case studies students will acquire and/or reinforce their skill at understanding diseases and developing and defending optimal treatment plans for successfully managing those diseases. The case studies utilized will integrate relevant pathophysiological, pharmacokinetic, pharmacoeconomic and pharmacological concepts with appropriate patient specific parameters. Students will be expected to communicate and defend their decisions, including the process followed in making those decisions, in understandable, appropriate written and verbal formats. Variable mixture of discussion, lecture, independent study and laboratory. Prereq: PHR 93X series courses; coreq: PHR 947 and 949.

PHR 947 APPLIED BIOPHARMACEUTICS AND PHARMACOKINETICS. (4)
The theoretical and practical considerations of the processes of drug absorption (including dosage formulation), distribution, metabolism and excretion and the mathematical models that describe these events including the calculation of dosage regimens for patients with problems ranging from simple to complex. A variable mixture of computer-assisted learning, formal lecture, interactive lecture and problem-based learning laboratory experiences. Prereq: Admission to the second year, College of Pharmacy.

#PHR 948 INTRODUCTORY PHARMACY PRACTICE EXPERIENCE II. (4)
A continuation of PHR 928 – Introductory Pharmacy Practice Experience I. Prereq: Successful completion of required PHR 940 series courses and consent of instructor.

*PHR 949 PATIENT CARE LABORATORY IV. (1)
PHR 950 PHARMACEUTICAL POLICY AND PUBLIC HEALTH. (4)
An introduction to health economics, pharmaceutical policy and public health, including issues of access to and disparities in healthcare and pharmaceuticals, health and disease indicators, health promotion, emergency preparedness, and the involvement of the pharmacist in public health and pharmaceutical policy. Course includes community service experiences. Prereq: PHR 940.

PHR 951 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: CARDIOPULMONARY AND RENAL SYSTEMS. (5)
A study of the pathophysiology of the major disorders affecting the cardiovascular, renal and respiratory system concentrating on the pharmacology of the therapeutic agents used to treat those disorders. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the third year, College of Pharmacy.

PHR 953 CURRENT TOPICS IN PHARMACY SEMINAR. (1)
A seminar course dealing with some of the current clinical and nonclinical issues affecting health care and health care practitioners. Prereq: PHR 940.

PHR 957 ADVANCED PHARMACOTHERAPY II. (5)
A continuation of PHR 946. Variable mixture of discussion, lecture, independent study and laboratory. Taught part of term. Prereq: Admission to the third year, College of Pharmacy; co-req: PHR 959.

PHR 959 PATIENT CARE LABORATORY V. (2)

PHR 960 PHARMACY PRACTICE MANAGEMENT. (5)
A discussion of pharmacy practice management in both community and health system practice settings including general business, human, financial, and operations management, and quality assurance/risk management issues. Course includes community service experiences. Prereq: PHR 950.

PHR 966 ADVANCED PHARMACOTHERAPY III. (5)
A continuation of PHR 957. Variable mixture of discussion, lecture, independent study and laboratory. Taught part of term. Prereq: Admission to the third year, College of Pharmacy; PHR 957, 959; co-req: PHR 969.

PHR 967 ADVANCED PHARMACOTHERAPY IV. (5)
A continuation of PHR 966. Variable mixture of discussion, lecture, independent study and laboratory. Taught part of term. Prereq: Admission to third year College of Pharmacy; PHR 957, 959; co-req: PHR 969.

PHR 969 PATIENT CARE LABORATORY VI. (2)

PHR 972 INTRODUCTION TO POST-GRADUATE PHARMACY PRACTICE. (1)
Survey course introducing students to post-graduate training opportunities and clinical opportunities such as residency, fellowship, graduate school, medical writing, and clinical research. Prereq: PY2 student, currently enrolled in the Pre-Residency pathway.

PHR 973 INTRODUCTION TO CRITICAL CARE PHARMACY. (2)
Advanced, clinically-focused course building on critical care foundation provided in PHR 956/7. Prereq: Successful completion of PHR 956/7.

PHR 974 CLINICAL ASPECTS OF PRESCRIPTION MEDICATIONS. (2)
A discussion of the clinical aspects of prescription medications designed to supplement, integrate and enhance the material covered in the Patient Care Laboratory course series (PHR 919-969) and the Advanced Pharmacotherapy course sequence (PHR 946, 956, 957, 966 and 967). Emphasis is placed on 1) a critical analysis of the important difference between various drugs and drug classes, and 2) refining drug information and clinical communication skills through simulated written drug consults and oral exams involving other health care practitioners. Prereq: PHR 956 and 957. Coreq: PHR 960, 966, 967 and 969.
PHR 976 COMPUTER AND INFORMATION TECHNOLOGIES IN PHARMACY. (2)
A discussion and introduction to the use of computer and other information technologies, such as Personal Data Assistants (PDAs) and patient management software, as aids to providing more effective and efficient pharmaceutical care services. Lecture: 1 hour; laboratory, 2 hours per week. Prereq: Admission to the second or third year, College of Pharmacy.

*PHR 988 ADVANCED PHARMACY PRACTICE EXPERIENCE. (3-6)
A clinical experience in the use of drugs in the diagnosis, treatment and management of diseases. Emphasis is placed on a rationale of drug therapy, the provision of contemporary pharmaceutical care services and functioning as a member of an interdisciplinary health care team. Experiences will be obtained in a variety of areas and may involve on-call and evening/weekend responsibilities. May be repeated to a maximum of 48 credits. Laboratory, 40 or more hours per week. Prereq: Admission to the fourth year, College of Pharmacy and permission of instructor.