



Course Catalog Description

The School of Pharmacy offers an innovative professional program leading to the Doctor of Pharmacy (Pharm.D.) degree that is embedded with the original concept of Pharmaceutical Care that has evolved into the standardized Pharmacist Patient Care Process: a patient-centered approach in collaboration with other providers on the health care team to optimize patient health and medication outcomes. Pharmaceutical Care encompasses the full range of skills, knowledge, abilities, and empathy, integrated to provide appropriate medication services to patients. The primary goal of the patient care process is to achieve healthcare that is accessible, high quality and cost-effective with definitive outcomes from medication use that improve patients' quality of life. These outcomes may include but are not limited to: (1) cure of a disease; (2) elimination or reduction of symptoms; (3) arresting or slowing a disease process; (4) prevention of disease; (5) diagnosis of disease; and (6) desired alterations in physiological processes, all with minimum risk to patients. The curriculum in pharmacy equips the student to understand many aspects of medicine, and emphasizes knowledge and practice in the areas of preventive medicine, primary care for the pediatric, adult and geriatric populations. The curriculum also provides for growing sectors of medicine such as long-term care, home health care, hospice care and transitions of care. Clinical training sites are established in both traditional and non-traditional sites, including medically underserved communities. Coupled with the diversity of the basic educational requirements, the curriculum satisfies the goal of producing a graduate whose personal ethics and professional skills allow for full participation and prosperity in the medical community.

The Doctor of Pharmacy Program requires six to seven calendar years for completion: two to three years of pre-professional education followed by four years of professional pharmacy education. Students have the option of choosing the Two-Year Track or Three-Year Track Pre-Professional Curriculum; both pre-professional curricula encompass general education requirements, including mathematics and science courses, totaling 83 or 95 semester hours respectively. Students are allowed to transfer the required preprofessional pharmacy courses from an accredited college or university. The content and comprehensiveness of the course should match with the comparable course offered at Hampton University. Final analysis of the transferability of a course rests with Hampton University.

Courses listed in the Doctor of Pharmacy Professional program have prerequisite coursework. Please refer to the School of Pharmacy Professional Handbook for an updated list of prerequisites.

Accreditation

The School of Pharmacy is fully accredited by the Accreditation Council for Pharmacy Education (ACPE), the body that accredits schools and colleges of pharmacy in the United States.

National Licensure Eligibility

All graduates of the Doctor of Pharmacy program are eligible for application for licensure to take the North American Pharmacist Licensure Examination (NAPLEX) to practice in the profession of pharmacy. This examination is administered by the National Association of Boards of Pharmacy (NABP). Graduates are also eligible to apply for the Multistate Pharmacy Jurisprudence Examination (MPJE) as well as other state examinations. The MPJE serves as the pharmacy law examination in participating jurisdictions and is required for licensure to practice as a pharmacist in the state in which the examination was taken.

Undergraduate (Pre-Professional) Admission



Students may apply for admission into the pre-pharmacy program directly from high school and must complete a minimum of two years of prerequisite coursework. Applicants who meet the requirements for admission to the University are eligible to be considered for the School of Pharmacy pre-professional program. Courses in the pre-pharmacy curriculum include the following: general and organic chemistry, biology, anatomy & physiology, microbiology, physics, calculus, English, speech, social sciences, psychology, history, health, University 101, and humanities. Pre-pharmacy majors are assigned to an advisor within the School of Pharmacy who assists them to prepare for entrance into the professional program. The Pharmacy College Admissions Test (PCAT) and a GPA of 2.75 are required to be considered for an interview to progress from the pre-pharmacy program into the professional level. Acceptance into the Pre-Professional program does not automatically guarantee acceptance into the Professional Pharmacy program.

Professional Admission

The School of Pharmacy uses a rolling admission process. Applications are accepted between January 15th and June 30th for fall admission. In addition to students applying through the Hampton University Pre-Professional program, students may also complete the prerequisite courses at another institution and transfer into the professional program and complete four years of study leading to the Doctor of Pharmacy degree. Note: courses must have been completed within ten years prior to applying. In addition to the basic University requirements, students admitted to the professional education program are expected to meet the following admissions requirements:

- 1) Complete a Criminal background check and drug screening
- 2) Maintain a minimum overall GPA of 2.75 (inclusive of all colleges and/or universities attended)
- 3) Complete all prerequisite courses or equivalency (appropriately approved) with a grade of "C" (2.00) or better in each course.
- 4) Submit an application using one of the following methods:
 - a) Submit the University application with the required fee, School of Pharmacy application supplement, two letters of recommendation, official transcripts from all institutions of higher education previously attended, and a written personal statement relative to pharmacy.
 - b) PharmCAS at www.pharmcas.org
- 5) Prospective students (both Hampton University Pre-Professional students and Transfer students) applying to the professional program will need to have a minimum preferred PCAT (Pharmacy College Admission Test) composite percentile rank (PR) of 50. Students may submit a preliminary score report. The student must request an official copy of their PCAT results to be sent to the School of Pharmacy for verification purposes.
- 6) Applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL) if they have less than 30 transferable college credits.

The most competitive applicants will be invited for an interview. Completion of an application and meeting requirements does NOT guarantee an interview or admission, which applies for both Hampton University pre-professional students as well as transfer students.

Standards For Technical Requirements of the Pharmacy Curriculum

Pharmacy students must possess skills and abilities that allow them to complete the curriculum and practice the profession of pharmacy. Hampton University's School of Pharmacy has an ethical responsibility for the safety of patients for whom the student will contact as a student and for whom the graduate will serve during his/her career. Patient safety is the guiding principle under which the School establishes requirements for physical,



cognitive, and emotional capabilities of matriculating students and graduates. The technical standards include: observational communications, motor, intellectual-conceptual (integrative and qualitative) behavioral and social skills and abilities.

The University is committed to enabling students with disabilities to complete the course of study by providing reasonable accommodations. However, some accommodations cannot be made because they are unreasonable and ultimately jeopardize patient safety. For example: **The use of a trained intermediary is not acceptable because of the inherent use of the observation and selections skills of the intermediary to judge and assess rather than those of the pharmacy student.**

The major points are further delineated below.

Observation. The student must be able to visually observe and interpret presented information. This will necessitate the functional use of vision, hearing and somatic senses.

Communication. The student must be able to communicate effectively and appropriately with patients, caregivers, faculty/ staff and members of the health care team. These skills include the appropriate use of spoken and written English: hearing, reading, and interpreting at a level adequate for the timely delivery of information.

Motor. The student must have sufficient motor function and skills necessary to perform task in the training and practice of pharmacy. Examples of such task may include the compounding of medicinals, administration of drugs or the provision of basic cardiac life support. Such actions require the coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses.

Students should perform a critical self-analysis to ascertain the degree of compliance with the technical requirements. Evidence of non-compliance should be communicated to the Office of Student Affairs of the School of Pharmacy immediately.

Additional Student Expenses

Throughout the course of study, students will need to bear expenses for several activities that are a required part of the curriculum. These expenses include certifications and training, background checks, access to proprietary software and resources that are required as a part of the course of study and preparatory material for the NAPLEX. A list of projected expenses for the professional program will be provided to students prior to matriculation. Students are encouraged to plan ahead and ensure that they have the funds ready to bear the costs related to these required activities.

Scholarships/Financial Assistance

Scholarships are awarded for qualifying students through the University Scholarship Program. These include Presidential Scholars, Academic Achievers, and various departmental scholarships as obtained through grants, projects, cooperative education (internships), Army and Navy ROTC, government, industry and organizations. Other financial assistance information is available through the University Financial Aid Office (Pell Grant, work-study, Federal Direct Loan Programs, etc.).

Application forms and information regarding admissions to the Pre-Professional Pharmacy Program may be obtained by writing to the Office of Admissions, Hampton University, Hampton, VA 23668 or calling (757) 727-5328. Information regarding the professional program, can be obtained by accessing the School of Pharmacy



website at <http://pharm.hamptonu.edu/page/Professional-Program-Overview>. Non-Hampton University pre-pharmacy students must download applications and forms, and mail them to the following address:

Hampton University
School of Pharmacy
Office of Student Affairs/Admissions
Hampton, VA 23668

Course Descriptions

PHA 301 Pharmaceutical Care I *Lec. 3/Credit 3*

This is the first class in a series of coursework where students will be introduced to the concepts of pharmaceutical care, professionalism and the potential challenges of applying them to a practice setting. This course will also provide students with basic computer skills and basic drug information retrieval and assessment strategies. This course includes an early practice experience.

PHA 302 Pharmaceutical Care II *Lec. 3/Credit 3*

This course provides the student with foundational concepts necessary to understand the practice of pharmaceutical care. Emphasis will be placed on understanding introductory, select laboratory values, principles of basic disease states, fundamentals of the patient medical chart, SOAP concepts, and methods for evaluating case studies. Students will also gain experience with oral and written presentations. Select concepts of professionalism and drug information will also be emphasized. This course includes an early practice experience. Prerequisite: Successful completion of PHA 301.

PHA 303 Introduction to the Practice of Pharmacy *Lec. 2/Credit 2*

This course provides the student with an introduction to pharmacy practice experiences. Students will be exposed to developmental topics, learn how the pharmacy runs, and become oriented to the workflow and layout of the dispensing area, all of which prepare students for their Introductory Pharmacy Practice Experiences. This course will also serve as an introduction to over-the-counter medications and products as well as the top 200 drugs.

PHA 305 Applied Human Physiology *Lec. 3/Credit 3*

This course will introduce the fundamental principles of human physiology. Concepts are reviewed using systems-based approach, with particular emphasis on cellular physiology, neuroendocrine, renal, and cardiovascular system physiology. Basic principles of pathophysiology and human disease will be introduced.

PHA 307 Principles of Pharmacology *Lec. 1/Credit 1*

This course will provide students with a fundamental understanding of how medications interact with biological systems as well as the basic rationale behind the design and utilization of drugs in disease states. An introduction to core principles of pharmacology will be discussed, including receptor biology and signal transduction pathways, basic pharmacokinetics and pharmacodynamics, routes of administration, drug metabolism and transport, drug therapy in special population, principles of drug targeting and drug development, and basic pharmacogenomics.



PHA 308 Pharmacology & Pathophysiology I *Lec. 4/Credit 4*

This three semester sequence of courses provides students with basic knowledge of pathophysiology of disease states that are organized by organ system as well as the medication classes that are used to each disease. In this series of courses, students will apply their previous knowledge of anatomy, physiology, biochemistry and medicinal chemistry to understand the factors that contribute to the occurrence of various diseases and to identify the rationale for specific pharmacotherapeutic interventions. These courses also provide the core information required for the Therapeutic series of courses.

PHA 310 Medical Immunology *Lec. 2/Credit 2*

This course will discuss the function of the immune system, including mechanisms of human immune function, and the immunologic basis of oncologic and autoimmune diseases, immunodeficiency, hypersensitivities and allergic reactions.

PHA 311 Physiologic Biochemistry *Lec. 3/Credit 3*

This course provides an overview of the chemical and physical properties of biomolecules, including carbohydrates, proteins, enzymes, lipids, nucleic acids, and vitamins. It focuses on the relationship of organic functional groups to these properties and their role in the activity of drugs. The course also focuses on intermediary metabolism and chemical interconversions in living systems.

PHA 315 Pharmacists' Patient Care Process (PPCP) I *Lec. 3/Credit 3*

This course will introduce the concept of patient-centered care, and how to apply the pharmacists' patient care process to optimize health and medication outcomes. The particular focus of this course will be on collecting and assessing subjective patient data, including developing patient interviewing skills, review of health records and methods of medical documentation, with an emphasis on the importance of utilizing the data to formulate, implement, and follow-up on a care plan.

PHA 314-413 Medicinal Chemistry I II *Lec. 4/Credit 4*

The focus of this two-course sequence is the chemistry of natural and synthetic drug entities, their physicochemical properties, sources, derivatives, modes of biotransformation, and structure activity relationships. In this course, a concerted effort is made to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles. Prerequisites: PHA 314 Successful completion of PHA 311; PHA 413 Successful completion of all P-1 level courses.

PHA 316 Principles of Drug Information *Lec. 3/Credit 3*

Drug information and informatics will be the primary focus of this course. Principles of drug information, drug information retrieval and analysis, literature evaluation, and verbal and written communication skills will be emphasized. Students will be able to utilize the drug information skills learned in this course to provide optimal pharmaceutical care in any pharmacy practice setting.

PHA 319 Pharmaceutical Calculations I *Lec. 2/Credit 2*



Pharmaceutical Calculations I will provide students with their first exposure to basic pharmaceutical calculations. This course is designed to provide students with information about basic medication orders/prescriptions and the mathematical calculations and abbreviations needed for interpretation of prescriptions.

PHA 320 Pharmaceutical Calculations I *Lec. 2/Credit 2*

Pharmaceutical Calculations I will provide students with their first exposure to basic pharmaceutical calculations. This course is designed to provide students with information about basic medication orders/prescriptions and the mathematical calculations and abbreviations needed for interpretation of prescriptions.

PHA 321 Anatomy/Physiology with Lab *Lec. 4./Lab 1./Credit 5*

Lectures, laboratories and demonstrations are designed to acquaint the student with the basic structure of the human body and the fundamental principles of human physiology. Concepts are taught which integrate physiology and pathophysiology. The course is organized according to the following systems: cellular physiology, neurophysiology, cardiovascular, respiratory, renal gastrointestinal and endocrine physiology.

PHA 326 Pharmaceutical Calculations II *Lec. 1/Credit 1*

This course will continue to develop student knowledge by application of basic pharmaceutical calculations. Also, students will be introduced to basic clinical and pharmacokinetic calculations.

PHA 330 Introduction to Pharmacy Practice *Lec. 2/Credit 2*

This course provides the student with an introduction to pharmacy practice experiences. Students will be exposed to developmental topics, learn how the pharmacy runs, and become oriented to the workflow and layout of the dispensing area, all of which prepare students for their Introductory Pharmacy Practice Experiences. This course will also serve as an introduction to over-the-counter medications and products as well as the top 200 drugs.

PHA 332 Biostatistics & Epidemiology *Lec. 3/Credit 3*

This course is an introductory class to basic statistical concepts, methods, and medical literature evaluation techniques. Students will learn the skills necessary to understand and analyze today's medical literature. The goal of the course is to expose students to biostatistical concepts by using examples of the clinical application of the concepts in drug literature evaluation. The course will introduce students to the application of statistics using SPSS® and Microsoft Excel and other common statistical packages that are currently available.

PHA 361 Biopharmaceutics I with Lab *Lec. 4./Lab 1./Credit 5*

This course is designed to help students to understand physicochemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 362 Biopharmaceutics II with Lab *Lec. 4./Lab 1./Credit 5*

This course is designed to help students to understand the physicochemical and biological factors which affect the bioavailability of drugs from dosage forms, and application of this knowledge to dosage form design, formulation, and drug delivery systems. It will also focus on the theory, technology, formulation, evaluation, and dispensing of solid and semi-solid dosage forms. Calculations, metrology and laboratory exercises are also emphasized.

PHA 370 Community IPPE *Credit 1*

An introductory pharmacy practice experience (IPPE) designed to assist the student in actively participating in and experiencing the distributive functions of pharmacy in the community pharmacy practice setting. The community pharmacy practice setting experience is divided into six main areas of experience: prescription processing and compounding, over the counter products, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/education. Prerequisites: Successful completion of all P-1 level didactic courses.

PHA 371 Biopharmaceutics I *Lec. 3/Credit 3*

This course is designed to help students to understand physicochemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 373 Biopharmaceutics I Laboratory *Lab 3./Credit 1*

This course is designed to help students to understand physicochemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 372 Biopharmaceutics II *Lec. 3/Credit 3*

This course is designed to help students to understand the physicochemical and biological factors which affect the bioavailability of drugs from dosage forms, and application of this knowledge to dosage form design, formulation, and drug delivery systems. It will also focus on the theory, technology, formulation, evaluation, and dispensing of solid and semi-solid dosage forms. Calculations, metrology and laboratory exercises are also emphasized.

PHA 374 Biopharmaceutics II Laboratory *Lab 3./Credit 1*

This course is designed to help students to understand the physicochemical and biological factors which affect the bioavailability of drugs from dosage forms, and application of this knowledge to dosage form design, formulation, and drug delivery systems. It will also focus on the theory, technology, formulation, evaluation, and dispensing of solid and semi-solid dosage forms. Calculations, metrology and laboratory exercises are also emphasized.

PHA 401 Pharmaceutical Care III *Lec. 3/Credit 3*



This course is designed to expose second year professional pharmacy students to advanced concepts of pharmaceutical care. Emphasis is placed on developing skills necessary to effectively communicate in pharmacy practice environments. This course will challenge students to acquire the skills necessary to successfully conduct patient assessment, develop pharmaceutical care plans, manage patient follow-up evaluations, and provide pharmacotherapy education. Prerequisite: Successful completion of all P-1 level courses.

PHA 402 Pharmaceutical Care IV *Lec. 3/Credit 3*

Drug information and informatics will be the primary focus of this course. Principles of drug information, drug information retrieval and analysis, literature evaluation, and verbal and written communication skills will be emphasized. Students will be able to utilize the drug information skills learned in this course to provide optimal pharmaceutical care in any pharmacy practice setting. Prerequisite: Successful completion of all P-1 level courses.

PHA 405 Pharmacology & Pathophysiology II *Lec. 5./Credit 5*

This three semester sequence of courses provides students with basic knowledge of pathophysiology of disease states that are organized by organ system as well as the medication classes that are used to each disease. In this series of courses, students will apply their previous knowledge of anatomy, physiology, biochemistry and medicinal chemistry to understand the factors that contribute to the occurrence of various diseases and to identify the rationale for specific pharmacotherapeutic interventions. These courses also provide the core information required for the Therapeutic series of courses.

PHA 406 Pharmacology & Pathophysiology III *Lec. 4/Credit 4*

This three semester sequence of courses provides students with basic knowledge of pathophysiology of disease states that are organized by organ system as well as the medication classes that are used to each disease. In this series of courses, students will apply their previous knowledge of anatomy, physiology, biochemistry and medicinal chemistry to understand the factors that contribute to the occurrence of various diseases and to identify the rationale for specific pharmacotherapeutic interventions. These courses also provide the core information required for the Therapeutic series of courses.

PHA 410 Therapeutics I: Gastrointestinal System and Nutrition Support *Lec. 3/Credit 3*

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The first course in this series will review selected diseases of the gastrointestinal system and nutrition, and discuss strategies for patient evaluation and treatment.

PHA 412 Therapeutics II: Neurology and Psychiatry *Lec. 3/Credit 3*

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts.



The second course in this series will review selected neurological and psychiatric diseases, and discuss strategies for patient evaluation and treatment.

PHA 418 Applied Therapeutics Lab I *Lab 3./Credit 1*

In this course series, students will apply knowledge of the pharmacist's patient care process to formulate, implement, and follow-up on a care plan for the disease management of patient case-based scenarios across a variety of clinical settings. Disease states discussed will be integrated with concurrent topics assessed in the Therapeutics I—II course series. As the course series progresses, increasing complexity will be applied, incorporating comorbidities and complicated patient courses based on previously acquired pharmacotherapy knowledge.

PHA 415 The Pharmacists' Patient Care Process II *Lec. 3/Credit 3*

This course will continue to develop student knowledge of the concept of patient-centered care, and how to apply the pharmacists' patient care process to optimize health and medication outcomes. The focus of this course will be on collecting and assessing objective patient data, including patient assessment and physical examination data, laboratory and diagnostic testing interpretation, patient counseling, with an emphasis on the importance of utilizing the data to formulate, implement, and follow-up on a care plan.

PHA 416 Biostatistics and Research Methods *Lec. 3/Credit 3*

This course is an introductory class to basic statistical concepts, methods, and medical literature evaluation techniques. Students will learn the skills necessary to understand and analyze today's medical literature. The goal of the course is to expose students to biostatistical concepts by using examples of the clinical application of the concepts in drug literature evaluation. The course will introduce students to the application of statistics using SPSS® and Microsoft Excel and other common statistical packages that are currently available. This course will also introduce students to the basic concepts of research. Basic concepts will include understanding the research question, hypothesis, methodology, data collection and analysis, results, and conclusion. Students will develop and write a mini proposal that encompasses these basic principles. This proposal will be implemented and completed by the end of the course. Students will also gain experience with writing abstracts and developing scientific posters to present findings of research studies.

PHA 417 PPCP Skills Lab *Lab. 3./Credit 1*

This course will develop knowledge and skills in pharmacist patient assessment techniques. Students will learn to perform basic patient subjective and objective assessment related to provision of patient care, including patient interviewing, obtaining medical history, vital signs assessment, and point-of-care testing.

PHA 420 Principles of Toxicology *Lec. 2/Credit 2*

This course provides the basic concepts of toxicology. This course also serves to alert pharmacy students to commonly occurring exposures; to instruct students as to what symptoms are presented and the actions or recommendations to make in instances of accidental poisoning.



PHA 423 Microbiology/Immunology *Lec. 3/Credit 3*

This course is designed to provide an overview of the interactions between host and pathogens in infectious diseases. It will focus on microbial organization, growth, metabolism, reproduction, and genetic variation. The course will also provide an overview of the immune system and its role in disease management. Prerequisite: Successful completion of all P-1 level courses.

PHA 431 Healthcare Administration/Management I *Lec. 2/Credit 2*

This course focuses on the structure and organization, delivery, regulation, and financing of the American health care system. Pharmacy, its role and responsibilities in the health care system, and its interaction with other health occupations is discussed. Reimbursement issues in health care are introduced and implications upon the practice of health care are discussed. This course covers the functions of management and administration (planning, organization, staffing, direction, and controlling) applied to pharmacy practice in the community and institutional settings. Contemporary management principles for the solution of these problems are discussed, in addition to introduction to basic management principles and methods; and entrepreneurial, social and economical aspects of practice. Prerequisite: Successful completion of all P-1 level courses.

PHA 432 Healthcare Administration/Management II *Lec. 3/Credit 3*

This course will provide the students pharmacy management principles that relate to contemporary pharmacy practice and present an introduction to the fundamentals of health outcomes research and pharmacoeconomic analysis. The overall goals of this course are to familiarize the student and provide basic tools in order to develop and deliver patient-centered pharmaceutical care services. Students will be exposed to pharmacoeconomic articles and participate in discussions which will provide them with tools useful to address the difficulties associated with implementing programs. Through an active learning process, students will follow and interpret current issues that are shaping pharmaceutical and medical care as they discover the impact these events will have in shaping their future practice. Prerequisite: Successful completion of all P-1 level courses.

PHA 434 Healthcare Administration/Management I *Lec. 2/Credit 2*

This course focuses on the structure and organization, delivery, regulation, and financing of the American health care system. Pharmacy, its role and responsibilities in the health care system, and its interaction with other health occupations is discussed. Reimbursement issues in health care are introduced and implications upon the practice of health care are discussed. This course covers the functions of management and administration (planning, organization, staffing, direction, and controlling) applied to pharmacy practice in the community and institutional settings. Contemporary management principles for the solution of these problems are discussed, in addition to introduction to basic management principles and methods; and entrepreneurial, social and economical aspects of practice.

PHA 461 Pharmacokinetics *Lec. 4/Credit 4*

This course is designed to provide the essential skills for employing pharmacokinetic principles in the selection and evaluation of drug therapy. It will focus on principles of drug therapy, evaluation, selection, and therapeutic monitoring with emphasis on clinically functional approaches to the design of dose regimens, and pharmacokinetics of select drugs in special patient populations and disease states. This course includes a required calculations laboratory period.



PHA 463 Pharmacokinetics *Lec. 5./Credit 5*

This course is designed to provide the essential skills for employing pharmacokinetic principles in the selection and evaluation of drug therapy. It will focus on principles of drug therapy, evaluation, selection, and therapeutic monitoring with emphasis on clinically functional approaches to the design of dose regimens, and pharmacokinetics of select drugs in special patient populations and disease states. This course includes a required calculations laboratory period. Prerequisite: Successful completion of all P-1 level courses.

PHA 462 Pharmacokinetics Laboratory *Lab 3./Credit 1*

This course is designed to provide the essential skills for employing pharmacokinetic principles in the selection and evaluation of drug therapy. It will focus on principles of drug therapy, evaluation, selection, and therapeutic monitoring with emphasis on clinically functional approaches to the design of dose regimens, and pharmacokinetics of select drugs in special patient populations and disease states. This course includes a required calculations laboratory period

PHA 470 Institutional IPPE *Credit 1*

An introductory pharmacy practice experience (IPPE) designed to assist the student in actively participating in and experiencing the distributive functions of pharmacy in the institutional pharmacy practice settings. The institutional pharmacy practice experience is divided into seven main areas of experience: drug distribution, manufacturing activities, dissemination of drug and product information, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/ education. Prerequisites: Successful completion of all P-2 level didactic courses.

PHA 480,482,484,581,583,585,586,588 Drug and Disease Management I-VIII *Lec. 3 or 4/Credit 3 or 4*

This sequence of courses is an integrated course that emphasizes a patient focused, systematic management of disease through appropriate therapeutic regimens. These modules are organized by disease states/organ systems and provide each student with basic knowledge of pathophysiology, pharmacology and therapeutics, thus enabling them to manage disease states, establish rational treatment and realistic outcomes, and provide parameters to monitor the progression of disease. Prerequisites for PHA 480, 482, and 484: Successful completion of all P-1 level courses and all P-2 Fall semester courses; Prerequisites for PHA 581, 583, 585, 586, and 588: Successful completion of all P-1 and P-2 level courses.

PHA 490 Introduction to Clerkships *Lec. 2/Credit 2*

This course provides the student with an introduction to advanced clinical practice. Students will participate in medical rounds, conferences, and seminars. He or she will be expected to monitor patient therapy and evaluate the appropriateness of drug therapy. This course is an intermediate practice experience. Prerequisites: Successful completion of all P-1 level courses and PHA 401.

PHA 501 Self-Care and Non-Prescription Therapies *Lec. 3/Credit 3*

This course is designed to familiarize the student with nonprescription drugs and products or over-the-counter medications. Emphasis will be placed on the pharmacology of the drugs, potential disease states in which the



drugs are utilized, self-administration techniques, consideration in selection of a product, and patient counseling. Prerequisite: Successful completion of all P-1 and P-2 level courses.

PHA 511 Therapeutics III: Respiratory and Cardiovascular Systems *Lec. 4/Credit 4*

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The third course in this series will review selected diseases of the respiratory system and cardiovascular system, and discuss strategies for patient evaluation and treatment.

PHA 513 Therapeutics IV: Renal and Endocrine Systems *Lec. 4/Credit 4*

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The fourth course in this series will review selected diseases of the renal system and endocrine system, and discuss strategies for patient evaluation and treatment.

PHA 515 Principles of Drug Design *Lec. 2/Credit 2*

This course is designed to provide the interested student with specific information concerning those concepts and techniques involved in the identification and preparation of new drug entities. Successful completion of this course would provide the student with advanced knowledge concerning the chemical aspects of drug action and toxicity.

PHA 516 Therapeutics V: Infectious Disease *Lec. 3/Credit 3*

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The fifth course in this series will review selected infectious diseases, and discuss strategies for patient evaluation and treatment.

PHA 517 Applied Therapeutics Lab II *Lab 3./Credit 1*

In this course series, students will apply knowledge of the pharmacist's patient care process to formulate, implement, and follow-up on a care plan for the disease management of patient case-based scenarios across a variety of clinical settings. Disease states discussed will be integrated with concurrent topics assessed in the Therapeutics III—IV course series. As the course series progresses, increasing complexity will be applied, incorporating comorbidities and complicated patient courses based on previously acquired pharmacotherapy knowledge.

PHA 518 Therapeutics VI: Rheumatology, Hematology, and Oncology *Lec. 3/Credit 3*

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The final course in this series will review selected rheumatologic, hematologic, and oncologic diseases, and discuss strategies for patient evaluation and treatment.



PHA 520 Applied Therapeutics Lab III *Lab 3./Credit 1*

In this course series, students will apply knowledge of the pharmacist's patient care process to formulate, implement, and follow-up on a care plan for the disease management of patient case-based scenarios across a variety of clinical settings. Disease states discussed will be integrated with concurrent topics assessed in the Therapeutics V—VI course series. As the course series progresses, increasing complexity will be applied, incorporating comorbidities and complicated patient courses based on previously acquired pharmacotherapy knowledge.

PHA 522 Toxicology and Poison Control *Lec. 2/Credit 2*

This course provides the basic concepts of toxicology. This course also serves to alert pharmacy students to commonly occurring exposures; to instruct students as to what symptoms are presented and the actions or recommendations to make in instances of accidental poisoning.

PHA 531 Introduction to Research Methods *Lec. 1/Credit 1*

This course introduces students to the basic concepts of research. Basic concepts will include understanding the research question, hypothesis, methodology, data collection and analysis, results, and conclusion. Students will develop and write a mini proposal that encompasses these basic principles. This proposal will be implemented and completed by the end of the course. Students will also gain experience with writing abstracts and developing scientific posters to present findings of research studies. Prerequisite: Successful completion of all P-1 and P-2 level courses.

PHA 532 Pharmacy Law and Ethics *Lec. 2/Credit 2*

The basic principles of law are reviewed as they relate to the practice under federal, state, and local regulation. The special problems involving the control of narcotics, poisons, and other controlled substances are reviewed. Some laws relative to business activities and discussions of professional ethics are also included. Prerequisite: Successful completion of all P-1 and P-2 level courses.

PHA 533 Managed Health Care *Lec. 2/Credit 2*

This course is designed to introduce professional pharmacy students to the complexity of our health care delivery system and to provide fundamental information on management of pharmaceuticals in various payer segments. Emphasis will be placed on understanding the key players in the health care system, the fundamentals of formulary management, key issues that affect the pharmaceutical industry, and opportunities for pharmacists in managed care.

PHA 534 Pharmacogenomics *Lec. 2/Credit 2*

This course discusses how genes affect an individual's response to drugs. An understanding of pharmacogenomics requires dual understanding of the basics of genetics and pharmacology. Students will learn how individual genetic information can be used to tailor drugs to patients to maximize efficacy and minimize adverse drug reactions. Topics that will be covered include: fundamentals of pharmacogenomics, interpretation of pharmacogenomic test results, literature evaluation and use of evidence-based guidelines, case based scenarios and implementation of pharmacogenomics in health care settings.



PHA 535 Independent Study I *Ind./Credit 2*

The objectives of the course are to provide students with an opportunity to explore and analyze health care topics in depth. The exploratory aspect of the course requires students to perform and complete an independent project (of their choice with approval by the course coordinators) related to an administrative principle, concept of trend that currently impacts the profession of pharmacy. The analytical aspect of the course requires students to participate in weekly briefings that will discuss traditional and controversial pharmacy administration issues.

PHA 536 Independent Study II *Ind./Credit 2*

The objectives of the course are to provide students with an opportunity to explore and analyze health care topics in depth. The exploratory aspect of the course requires students to perform and complete an independent project (of their choice with approval by the course coordinators) related to an administrative principle, concept of trend that currently impacts the profession of pharmacy. The analytical aspect of the course requires students to participate in weekly briefings that will discuss traditional and controversial pharmacy administration issues. Students who complete PHA 535 must complete a different independent project for PHA 536.

PHA 539 Behavioral Psychology *Lec. 2/Credit 2*

The student is provided with an understanding of behavioral psychology and in particular the psychology of the chronically ill. The course attempts to improve the professionalism exhibited by students in their patient interactions and their associations with other members of the health care team.

PHA 545 Healthcare Administration/Management II *Lec. 3/Credit 3*

This course will provide the students pharmacy management principles that relate to contemporary pharmacy practice and present an introduction to the fundamentals of health outcomes research and pharmacoeconomic analysis. The overall goals of this course are to familiarize the student and provide basic tools in order to develop and deliver patient-centered pharmaceutical care services. Students will be exposed to pharmacoeconomic articles and participate in discussions which will provide them with tools useful to address the difficulties associated with implementing programs. Through an active learning process, students will follow and interpret current issues that are shaping pharmaceutical and medical care as they discover the impact these events will have in shaping their future practice.

PHA 561 Analytical Methods in the Pharmaceutical Sciences *Lec. 2/Credit 2*

This course sequence is designed to provide the student the opportunity to learn various assay procedures and research methodologies in chemistry, pharmacology, chemotherapy, pharmaceuticals and enzymology.

PHA 562 Clinical Pharmacokinetics *Lec. 2/Credit 2*

This course is designed to focus on strategies of developing and operating clinical pharmacokinetic or Therapeutic Drug Monitoring Services (TDMS). The course does not focus on manipulating pharmacokinetic equations to calculate drug dosages. It addresses the following areas: the environment in which the services are offered, the process involved in individualizing drug dosing, therapeutic/ pharmacodynamic monitoring and patient outcome assessment. The course will further address more detailed dosing concepts in special populations than provided in the foundation course in pharmacokinetics.



PHA 563 Introduction to Public Health *Lec. 2/Credit 2*

The objective of this elective course is to provide students with an understanding of the concepts and the importance of public health as a science and its goal of maximum health for all. Students will gain a thorough understanding of public health promotion and disease prevention strategies especially relating to underserved, at-risk populations.

PHA 564 Advanced Dosage Form Technology *Lec. 2/Credit 2*

This course will be concerned with the design, the technology, engineering principles and the biopharmaceutical aspects of non-sterile dosage forms. The course will guide the student from discovery of a new drug substance to the final delivery system. Initially the student will learn the physical-chemical information required by the industrial formulator, how it is collected and how it is used to decide on the final dosage forms.

PHA 570 Elective IPPE *Credit 1*

The elective introductory pharmacy practice experience (IPPE) is designed to expose students to additional areas of pharmacy practice. Elective opportunities are available in administration, association management, consulting, disease state management, geriatrics, home health, managed care, nuclear pharmacy, nutrition, oncology, pharmaceutical industry, regulatory affairs, and toxicology. Other elective opportunities are available upon approval by the Director of Experiential Education. Prerequisites: Successful completion of all P-1, P-2 and P-3 level didactic courses.

PHA 572 Alternative Medicine *Lec. 2/Credit 2*

This course is designed to provide the student with a basic knowledge about alternative practices used by patients as a self-medication option or in conjunction with physician ordered procedures in the United States as well as in other countries. The courses approach is to present pharmacy students with the intellectual foundations and tools to understand the great diversity among different cultures in their self-medication practices. The student will be exposed to current information on herbs that are available in U.S. pharmacies so they can offer counseling to patients on the risks and benefits of using alternative medicine.

PHA 573 Patient Assessment with Lab *Lec. 1./Lab 1./Credit 2*

This course is designed to develop knowledge in assessment, data collection, interpretation and evaluation of the patient physical state. Additional techniques of patient interviewing, charting, medication profiling, and advisement will also be covered. Prerequisite: Successful completion of all P-1 and P-2 level courses.

PHA 574 Pharmacy Practice Lab *Lab 4./Credit 4*

This laboratory experience will simulate the actual practice of pharmacy in both retail and institutional settings. Students will learn the fundamentals of processing and filling a prescription or doctor's drug order. He or she will gain experience in compounding medications, preparing sterile products, recommending over-the-counter medications, and counseling patients. Prerequisite: Successful completion of all P-1, P-2 level courses, and P-3 Fall semester courses. Exceptions to this prerequisite policy will only be granted at the Dean's discretion.



PHA 576 Nuclear Pharmacy *Lec. 2/Credit 2*

This course focuses on the study of radionuclides, their characteristics and detection, including the physics of radioactive decay, in-depth study of the interaction of radiation with matter and the primary means of detection. Emphasis is placed on the radionuclides used in medicine. Mathematics, as it pertains to the measurement of radioactivity, and the phenomena decay are covered in detail. Radiation protection and health physics are discussed as they apply to the practice of nuclear pharmacy.

PHA 577 Natural Products *Lec. 2/Credit 2*

This course encompasses a study of drugs obtained from natural sources. The botanical and animal origins of such drugs, their historical importance, physiochemical properties, and their pharmacological applications are discussed. Basic terminology associated with the area of pharmacognosy as well as extraction and purification procedures for natural drugs are also discussed.

PHA 582 Drugs of Abuse *Lec. 2/Credit 2*

This course is designed to give the student a basic introduction to the area of substance abuse and dependency. It is intended that upon completion of this course the student will have an appreciation for the terminology and diagnostic criteria appropriate to this area.

PHA 587 Health Disparities and Service Learning *Lec. 2/Credit 2*

Students will become familiar with the nation's agenda for health improvement of its citizens. They will learn about health disparities in general, and focus on the six leading disparities identified in President Clinton's Health Initiative. Students will explore etiologies, statistics, severity, implications and possible solutions of the various disparities. Students will also be introduced to the concept of service learning and volunteerism in programs that target underserved populations. They will be shown how they can make a difference in their communities and the lives of the patients they serve.

PHA 590 Pediatric Pharmacotherapy *Lec. 2/Credit 2*

The objective of the course is to present basic therapeutic principles and unique problems associated with pediatric drug therapy so that the students can more effectively participate in rational pediatric therapeutics.

PHA 592 Advance Nutritional/Metabolic Support *Lec. 2/Credit 2*

In this course, the physiological theories of metabolic support in various disease states will be presented. This background information will be utilized by the students as they develop experience in assessing the patient's metabolic status, estimating the patient's nutritional requirements, and formulating appropriate enteral or parenteral feedings.

PHA 594 Prescription Drug Therapy Review: Top 200 Drugs *Lec. 2/Credit 2*

This course involves the study of the top 200 most commonly prescribed drugs. Students will learn trade names, generic names, available strengths, available dosage forms, appropriate dosing guidelines, common adverse drug reactions, patient counseling information and clinically significant drug-drug interactions.



PHA 595 Clinical Oncology *Lec. 2/Credit 2*

This course provides an introduction to the pathology and treatment of neoplastic diseases with an emphasis on the patient and the application of clinical pharmacy concepts.

PHA 597 Geriatric Pharmacotherapy *Lec. 2/Credit 2*

This course will review the basic physiological changes occurring with increasing age and define their impact on pharmacokinetics of drugs in the geriatric patient. Managerial, pharmaceutical, and consultant aspects of pharmacy services provided to long term care facilities and alternate types of care available to the elderly patient will be emphasized. Health care issues impacting geriatric patient care and future trends in pharmacy services for geriatric patients will also be presented. Students will attend geriatric case study presentations of senior Pharm. D. students and participate in discussions to gain experience with therapeutic uses.

PHA 650, 651, 652 Seminar I, II, III *Sem. 1./Credit 1*

The Seminar Series is a three course requirement that is designed to provide students with the skills, techniques, and competencies required to successfully navigate the advanced clinical clerkship experiences. In addition this course provides the student an opportunity and experience in preparing and presenting pharmacy related topics to colleagues and other healthcare professionals in a formalized manner. Prerequisites: Successful completion of all P-1, P-2, and P-3 courses.

PHA 670 Community Pharmacy Practice Experience (APPE) *Credit 4*

An advanced pharmacy practice experience designed to assist the student in actively participating and experiencing the distributive functions of pharmacy in the community pharmacy practice setting. The community pharmacy practice setting experience is divided into six main areas of experience: prescription processing and compounding, over the counter products, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/education. Prerequisite: Successful completion of P-3 level courses.

PHA 671 Institutional Pharmacy Practice Experience (APPE) *Credit 4*

An advanced pharmacy practice experience designed to assist the student in actively participating and experiencing the distributive functions of pharmacy in the institutional pharmacy practice settings. The institutional pharmacy practice experience is divided into seven main areas of experience: drug distribution, manufacturing activities, dissemination of drug and product information, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/education. Prerequisite: Successful completion of P-3 level courses.

PHA 672 Community/Institutional Pharmacy Practice Experience (APPE) II *Credit 4*

An advanced pharmacy practice experience designed to assist the student in actively participating and experiencing the distributive functions of pharmacy in the community, institutional, or other pharmacy practice settings, which provide distributive services of pharmaceuticals (nuclear pharmacy, long-term care, mail order, etc.). The pharmacy practice experience is designed to provide additional experience in the following areas: prescription processing and compounding, over the counter medications, drug distribution, manufacturing



management, pharmacy law, and team interaction/ education. Prerequisite: Successful completion of P-3 level courses.

PHA 675 Academic Pharmacy APPE *Credit 4*

This elective rotation is designed to enhance the student's awareness of a career in academia. The experience will allow the student to develop a teaching style that complements their style and strengths, and expose the student to the wide range of responsibilities associated with a didactic based academic career. The student will be given a firsthand experience in the academic responsibility of teaching, scholarship, and service to the pharmacy profession and the academic institution. Prerequisites: Successful completion of all P-3 level courses.

PHA 676 Managed Care APPE *Credit 4*

This elective rotation is designed to introduce students to the concepts in this discipline. Students will be exposed to how pharmacists play a large role in decision making for clinical policies with respect to drug utilization, including prior authorization policies, quantity limits, etc. Experience within the managed care space allows students to understand the decisions made by managed care organizations that lead to concurrent drug utilization review edits at the point of sale and beyond. Prerequisites: Successful completion of all P-3 level courses.

PHA 680 Research I APPE *Credit 4*

This elective rotation is intended to provide an opportunity for Doctor of Pharmacy students to acquire experience in the various aspects of research of discovery, integration, application or teaching. The rotation is a five-week experience in which the student will participate in a collaborative research process with faculty from the department of pharmacy practice and/or pharmaceutical sciences. Give the time limit, the intent is to expose the student to techniques and behavioral skills for identifying research questions or problems, performing literature searches, defining discipline-related terminology, demonstrating the development of lab techniques, patient care or teaching skills, and reflecting on lesson learned on conducting biomedical, clinical and translational research. Prerequisite: Successful completion of all P-3 level courses.

PHA 681 Research II APPE *Credit 4*

This elective rotation is intended to provide an opportunity for Doctor of Pharmacy students to acquire experience in the various aspects of research of discovery, integration, application or teaching. The rotation is a five-week experience in which the student will participate in a collaborative research process with faculty from the department of pharmacy practice and/or pharmaceutical sciences. Give the time limit, the intent is to expose the student to techniques and behavioral skills for identifying research questions or problems, performing literature searches, defining discipline-related terminology, demonstrating the development of lab techniques, patient care or teaching skills, and reflecting on lesson learned on conducting biomedical, clinical and translational research. Prerequisite: Successful completion of all P-3 level courses.

PHA 683 Geriatrics *Credit 4*

This course focuses on inpatient and/or outpatient experiences in the care of the elderly. Objectives will include developing medication care plans (MCP) for patients who have diminished blood flow in concert with multiple disease states, frailty of body and spirit, diminished mental capacity, diminished mobility, and reduction in use of senses (e.g. sight, hearing). Attention will also be focused on developing the most economical MCP for persons with reduced or limited income. Simultaneous assignment to several inpatient facilities, home health care



agencies, or home bound patients is likely. An understanding of the impact of Medicare and other insurance plans on the ability to deliver the best MCP is an objective for all assignment areas. Prerequisites: Successful completion of all P-3 level courses.

PHA 685 Administration/Management *Credit 4*

This course is designed to expose the student to a variety of situations related to the running of a medical-related operation, including medical profession associations. The student will be paired with an administrative level preceptor from industry, chain pharmacy, hospital pharmacy, or professional organization. The five week rotation may be split among as many as three such experiences with no less than one week in any specific arena.

Prerequisites: Successful completion of all P-3 level courses.

PHA 690 Internal Medicine APPE *Credit 4*

The Internal Medicine I advanced pharmacy practice experience is designed to provide the student exposure and experience in comprehensive treatment of disease states of adult patients being cared for in an institutionalized setting. In addition, students will utilize problem-solving skills, develop therapeutic plans, monitor lab values, and assess for drug interactions and adverse drug reactions. Prerequisites: Successful completion of all P-3 level courses.

PHA 691 Ambulatory Care APPE *Credit 4*

The Ambulatory Care I advanced pharmacy practice experience is designed to give students experience in treating patients who are typically not acutely ill in "out-patient" settings. These experiences could focus on the medication management of specific diseases (such as hypertension, diabetes, asthma, hyperlipidemia, etc.) or general care of patients with chronic conditions. Students will be involved in problem solving, patient medication counseling and therapeutic monitoring. In addition, they will address drug interactions, side effects, and compliance issues in the care of these patients. Prerequisites: Successful completion of all P-3 level courses.

PHA 692 Ambulatory Care II *Credit 4*

The Ambulatory Care II advanced pharmacy practice experience will focus on management of patients in specialized out-patient settings such as retail pharmacy, managed care, long-term care, home health care, and specialty clinics or programs. Prerequisites: Successful completion of all P-3 level courses.

PHA 693 Pediatrics APPE *Credit 4*

The pediatric advanced pharmacy practice experience provides students with the opportunity to learn how to effectively treat medical illnesses of infant and child patients. Students will learn the different treatment options and regimens utilized in this patient population and take into consideration the different pharmacokinetic profiles of drugs in infants and children. Common disease states that will be seen are pneumonia, asthma, epilepsy, diabetes, sickle cell, trauma, and other common childhood diseases. Prerequisites: Successful completion of all P-3 level courses.



PHA 694 Psychiatry APPE *Credit 4*

The psychiatric advanced pharmacy practice experience provides students experience in treating acute as well as chronic psychiatric patients. Emphasis is on the initiation of medication, therapeutic monitoring, as well as medication stabilization and long-term treatment of psychiatric patients. Students will learn how to dose, treat, and monitor patients with mood disorders, schizophrenia, substance abuse disorders, cognitive disorders and other clinical psychiatric disorders. Prerequisites: Successful completion of all P-3 level courses.

PHA 695 Drug Information APPE *Credit 4*

This clerkship experience allows the student to serve as a primary provider of drug information in a structured environment that possesses both the resources and the faculty expertise in clinical information management and dissemination. Emphasis is placed on how to properly receive drug information requests, design and execute a systematic search strategy, assimilate the information retrieved, and formulate and communicate an appropriate response. The student continues to build their knowledge base of available drug information resources and gains practical experience in critically evaluating those resources. Students also prepare drug monographs and journal articles to further develop their medical writing skills. Prerequisites: Successful completion of all P-3 level courses.

PHA 684, 696, 697, 698 Special Interest APPE *Credit 4*

The elective rotation is designed to expose students to additional areas of pharmacy practice of their interest. Elective opportunities are available in administration, association management, consulting, disease state management, public health, home health, nutrition, oncology, pharmaceutical industry, regulatory affairs, and toxicology. Other elective opportunities are available upon approval by the Director of Experiential Education. Prerequisites: Successful completion of all P-3 level courses.

PHA 699 Advanced Internal Medicine APPE *Credit 4*

This elective rotation is designed to provide the student exposure and experience in comprehensive treatment of disease states of adult patients in specialized internal medicine areas, such as hematology/oncology, ICU, CCU, surgery, general oncology and infectious diseases. Prerequisites: Successful completion of all P-3 level courses.