



PHARMD CURRICULUM_F24

COURSE DESCRIPTIONS

FIRST PROFESSIONAL YEAR

PHA 5XX Pharmacy Practice & Patient Care

Lec. 2./Credit 2.

This course provides the student with an introduction to pharmacy practice experiences. Students will learn the history of pharmacy, pharmacy operations including workflow orientation and layout of the dispensing area, all of which prepare students for their Introductory Pharmacy Practice Experiences introducing to concepts of ethics, communication and medical terminology. Students will be introduced to 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 5XX Top 200 Medications

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, indications and appropriate dosing guidelines, common adverse drug reactions, patient counseling information and clinically significant drug-drug interaction.

PHA 5XX Integrated Biomedical Science w/Lab

Lec.5. /Lab.0. /Credit 5.

This course will reinforce the fundamental principles of human physiology by providing a solid foundation in the areas of genetics, anatomy, biochemistry, human, molecular as well as cellular physiology. The course will stress the interrelationships between normal biological processes, basic genetic and biochemical factors that contribute to the development of diseases, as well as pharmacological rationales for targeting bio-macromolecules and signaling pathways. This course will employ problem-based and team-based learning approaches 1) to engage students, 2) to expand students' understanding of the integrated functions of the organ systems; 3) and to improve students' critical thinking as well as decision-making skills required for successful completion of clinical and advanced science courses. Prerequisite(s): CHE 302, BIO 224 and BIO 225 or BIO 336 or with the consent of the Department Chairperson.

PHA 5XX Biopharmaceutics I w/Lab**Lec. 4./Lab. 0. /Credit 4.**

This course is designed to help students to understand physico-chemical and biological principles, which affect functions of various pharmaceutical dosage forms, including the solubility, acid base theory, pharmaceutical excipient, kinetics and drug stability, it will also focus on the design, preparation, evaluation and use of liquid and solid dosage forms. Calculations, metrology, basic prescription analysis, and laboratory exercises are also emphasized.

PHA 5XX Pharmaceutical Calculations**Lab. 2. /Credit 2.**

This course 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. 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 5XX PPCP Skills Lab I**Lec. 1./Lab 0. /Credit 1.**

This course will introduce the pharmacist's patient care process (PPCP) to collect, assess, plan, implement, follow up and evaluate patient cases based on scenarios across a variety of clinical settings. Students will learn communication abilities, how to collect a comprehensive patient history, develop an individualized patient-centered care plan in collaboration with other health care professionals, implement the care plan and conduct follow-up monitoring and evaluation using current, evidence-based guidelines and clinical trials.

PHA 5XX IPPE I**Lec. 1./Credit 1.**

This course is the first of six longitudinal IPPE (Introductory Pharmacy Practice Experience) and is designed to allow the student to gain experience with the various roles of pharmacists in the delivery of health care services in community pharmacy practice settings. Students will have the opportunity to observe and provide direct patient-oriented medication delivery and health care to a diverse patient population, and practice appropriate communication with patients and members of the health care team. Through this supervised experience, the student will be able to apply introductory concepts from clinical didactic course work to gain experience in direct patient care, promotion of wellness, and disease prevention. The pharmacy setting for this experience may include independent, chain, and health-system community sites.

PHA 5XX Interprofessional Education & Professional Development I Lec. 1./Credit 1.

This course is the first of six sequential courses that serve as an anchor for the co-curriculum and a home for tracking achievements of performance milestones. This course continues to expand on the 10 pharmacist attributes (problem solving/critical thinking, education, patient advocacy, cultural awareness, interprofessional collaboration, communication, self-awareness, leadership, innovation and entrepreneurship, and professionalism). This course focuses on development of leadership, self-awareness, professionalism and innovative mindset.

PHA 5XX Integrated Pharmacology & Medicinal Chemistry I Lec. 3./Credit 3.

This is the first course in a five-part series. Students will explore basic concepts related to pharmacology, medicinal chemistry, and pharmacogenomics. An introduction to core principles of pharmacology will be discussed, a) mechanisms of action of drugs of various categories including biologics, b) basic pharmacodynamics and pharmacokinetics, c) adverse effects and side effects of drugs, d) mechanisms of drug-drug interactions, e) drug discovery and development, f) acute and chronic toxic effect of xenobiotics, including drug and chemical overdose and antidotes, and g) pharmacogenomic and genetic basis of disease. Students will learn the medicinal chemistry of natural and synthetic drug entities, their physicochemical properties, sources, derivatives, modes of biotransformation, and structure activity relationships. Students will be able to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles and apply them to making drug therapy decisions. Topics of focus include crude drugs from natural products and dietary supplements, general principles, autonomic nervous system (ANS), central nervous system (CNS), and gastrointestinal (GI) system medications.

PHA 5XX Drug Information & Health Informatics Lec. 2./Credit 2.

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 5XX Biopharmaceutics II & Basic Pharmacokinetics w/Lab Lec. 4./Credit 4.

This course will continue the design, preparation, evaluation, and use of liquid and solid dosage forms. Calculations, metrology, prescription analysis, and laboratory exercises are also emphasized. In addition, the course will introduce the basic principles and methods of biopharmaceutics and pharmacokinetics. including the kinetics of drug absorption, distribution, metabolism, and excretion; The basis of pharmacokinetics; general concept of order of kinetics (zero and first) and one- and two-compartment models will be introduced. The kinetic knowledge will be used in the evaluation of the various factors affecting drug. This course will continue to develop student knowledge by application of basic pharmaceutical and pharmacokinetic calculations where applicable.

PHA 5XX Integrated Therapeutics I: Nutrition & GI**Lec. 2./Credit 2.**

In this course, students will be provided a didactic framework for therapeutic management of selected Nutrition and GI disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process. This course will continue to develop student knowledge by application of basic pharmaceutical and pharmacokinetic calculations where applicable.

PHA 5XX Integrated Therapeutics II: CNS**Lec. 2./Credit 2.**

In this course, students will be provided a didactic framework for therapeutic management of selected CNS disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of 13 this course is to prepare students to develop rational drug therapy plans using the PPCP process. This course will continue to develop student knowledge by application of basic pharmaceutical and pharmacokinetic calculations where applicable.

PHA 5XX PPCP Skills Case Lab II**Lec. 1./Lab. 0. /Credit 1.**

This course will allow students to apply the knowledge related to Nutrition, GI and CNS and use the pharmacist's patient care process (PPCP) to collect, assess, plan, implement, follow up and evaluate patient cases based on scenarios across a variety of clinical settings. Students will learn communication abilities, how to collect a comprehensive patient history, develop an individualized patient-centered care plan in collaboration with other health care professionals, implement the care plan and conduct follow-up monitoring and evaluation using current, evidence-based guidelines and clinical trials. This course will continue to develop student knowledge by application of basic pharmaceutical and pharmacokinetic calculations where applicable.

PHA 5XX IPPE II**Lec. 1./Credit 1.**

This course is the second of six longitudinal IPPE (Introductory Pharmacy Practice Experience) and is designed to allow the student to gain experience with the various roles of pharmacists in the delivery of health care services in community pharmacy practice settings. Students will have the opportunity to observe and provide direct patient-oriented medication delivery and health care to a diverse patient population, and practice appropriate communication with patients and members of the health care team. Through this supervised experience, the student will be able to apply introductory concepts from clinical didactic course work to gain experience in direct patient care, promotion of wellness, and disease prevention. The pharmacy setting for this experience may include independent, chain, and health-system community sites.

PHA 5XX Interprofessional Education & Professional Development II Lec. 1./Credit 1.

This course is the second of six sequential courses that serve as an anchor for the co-curriculum and a home for tracking achievements of performance milestones. This course continues to expand on the 10 pharmacist attributes (problem solving/critical thinking, education, patient advocacy, cultural awareness, interprofessional collaboration, communication, self-awareness, leadership, innovation and entrepreneurship, and professionalism). This course focuses on development of leadership, self-awareness, professionalism and innovative mindset.

PHA 5XX Self-Care and Complimentary & Alternative Therapy Lec. 2./Credit 2.

This course prepares the student to practice self-care pharmacotherapy by teaching the student to select and perform patient assessments pertinent to the outpatient setting, triage care, and select appropriate nonprescription therapy if warranted. Students will utilize skills of patient assessment, point-of-care and home-testing devices, recommending and counseling 14 patients on nonpharmacologic and pharmacologic therapies (including natural products and alternative and complementary therapies), and referring patients to appropriate healthcare providers when self-care is not appropriate.

PHA 5XX Concentrated IPPE (Community) Lec. 1./Credit 1.

This course is a three-week (120 hour) IPPE that students complete during the summer between their P1 and P2 years. Students are exposed to a community pharmacy setting in which they gain experience in the drug distribution process, patient counseling, and interprofessional collaboration. Students have opportunities to apply concepts and clinical knowledge from the P1 curriculum to patient care in the setting of a community pharmacy. They participate in patient care through communication with patients and other healthcare providers, the medication distribution process, patient counseling, and quality improvement processes. This course will continue to develop student knowledge by application of basic pharmaceutical and pharmacokinetic calculations where applicable.

SECOND PROFESSIONAL YEAR

PHA 6XX Integrated Pharmacology & Medicinal Chemistry II

Lec. 3./Credit 3.

This is the second course in a five-part series. Students will explore basic concepts related to pharmacology, medicinal chemistry, and pharmacogenomics. An introduction to core principles of pharmacology will be discussed, a) mechanisms of action of drugs of various categories including biologics, b) basic pharmacodynamics and pharmacokinetics, c) adverse effects and side effects of drugs, d) mechanisms of drug-drug interactions, e) drug discovery and development, f) acute and chronic toxic effect of xenobiotics, including drug and chemical overdose and antidotes, and g) pharmacogenomic and genetic basis of disease. Students will learn the medicinal chemistry of natural and synthetic drug entities, their physicochemical properties, sources, derivatives, modes of biotransformation, and structure activity relationships. Students will be able to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles and apply them to making drug therapy decisions. Topics of focus include cardiovascular system, renal system, and pulmonary system medications.

PHA 6XX Pharmacy Practice Lab & Patient Assessment I

Lec. 2./Lab 0./Credit 2 .

This laboratory course will simulate the actual practice of pharmacy in community settings. Students will learn the fundamentals of processing and adjudication of prescriptions using technology used in the community pharmacy setting, and workflow. Students will gain experience in compounding nonsterile medications and products, recommending over-the-counter medications, and patient counseling. Additionally, 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 6XX Integrated Therapeutics III: Cardiovascular

Lec. 4./Credit 4 .

In this course, students will be provided a didactic framework for therapeutic management of selected cardiovascular disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 6XX Integrated Therapeutics IV: Pulmonary

Lec. 2./Credit 2.

In this course, students will be provided a didactic framework for therapeutic management of selected pulmonary disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 6XX Integrated Therapeutics V: Renal**Lec. 2./Credit 2 .**

In this course, students will be provided a didactic framework for therapeutic management of selected renal disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 6XX PPCP Skills Case Lab III**Lec. 1./Credit 1 .**

In this course, students will apply the knowledge related to cardiovascular, renal and pulmonary disorders and use the pharmacist's patient care process (PPCP) to collect, assess, plan, implement, follow up and evaluate patient cases based on scenarios across a variety of clinical settings. Students will learn communication abilities, how to collect a comprehensive patient history, develop an individualized patient-centered care plan in collaboration with other health care professionals, implement the care plan and conduct follow-up monitoring and evaluation using current, evidence-based guidelines and clinical trials.

PHA 6XX IPPE III**Lec. 1./Credit 1 .**

This early practice Experience is designed to facilitate successful interaction with the elderly population and their social support network on personal and professional levels through discussion of physiologic changes and normal and pathologic aging; important medical conditions most common among the elderly; the impact of chronic illness; issues in death and dying; modifications in drug therapy; and the role of the pharmacist in caring for the elderly.

PHA 6XX Interprofessional Education & Development III**Lec. 1./Credit 1 .**

This course is the third of six sequential courses that serve as an anchor for the co-curriculum and a home for tracking achievements of performance milestones. This course continues to expand on the 10 pharmacist attributes (problem solving/critical thinking, education, patient advocacy, cultural awareness, interprofessional collaboration, communication, self-awareness, leadership, innovation and entrepreneurship, and professionalism). This course focuses on development of leadership, self-awareness, professionalism and innovative mindset.

PHA 6XX Integrated Pharmacology & Medicinal Chemistry III**Lec. 3./Credit 3 .**

This is the third course in a five-part series. Students will explore basic concepts related to pharmacology, medicinal chemistry, and pharmacogenomics. An introduction to core principles of pharmacology will be discussed, a) mechanisms of action of drugs of various categories including biologics, b) basic pharmacodynamics and pharmacokinetics, c) adverse effects and side effects of drugs, d) mechanisms of drug-drug interactions, e) drug discovery and development, f) acute and chronic toxic effect of xenobiotics, including drug and chemical overdose and antidotes, and g) pharmacogenomic and

genetic basis of disease. Students will learn the medicinal chemistry of natural and synthetic drug entities, their physicochemical properties, sources, derivatives, modes of biotransformation, and structure activity relationships. Students will be able to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles and apply them to making drug therapy decisions. Topics of focus include endocrine/reproductive systems, rheumatic, and pain medications.

PHA 6XX Healthcare Administration I**Lec. 2./Credit 2.**

This course focuses on the structure and organization, delivery, regulation (Medicare, Medicaid, & Medicaid Expansion, Managed Care), and financing of the American healthcare system. Pharmacy, its role and responsibilities in the healthcare system, public health, and its interaction with other health occupations is discussed. Reimbursement issues in healthcare 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; entrepreneurial, social and pharmacoeconomic aspects and their effect on practice.

PHA 6XX Biostatistics and Clinical Research Methods**Lec. 3./Credit 3 .**

This course introduces students to the basic concepts of biostatistics and research. Basic concepts will include understanding and developing the research question, hypothesis testing, methodology, data collection and analysis, results, and conclusion. Students will analyze a secondary dataset, perform spatial analysis, write an abstract and prepare a presentation utilizing a 10-step plan that encompasses these basic principles. The presentation will be presented at the end of the semester. Students will also gain experience developing scientific posters to present findings of research studies.

PHA 6XX Pharmacy Practice Lab & Patient Assessment II**Lec. 2./Lab 0./Credit 2 .**

This course introduces students to the knowledge, skill set, and resources needed to practice in an institutional setting. Contextualized, competency-based, learning activities are used to develop the knowledge and skills in pharmacist patient assessment techniques related to provision of patient care, including patient interviewing, obtaining medical history from the EHR and patient, vital signs assessment, and point-of-care testing.

PHA 6XX Integrated Therapeutics VI: Endocrine**Lec. 2./Credit 2 .**

In this course, students will be provided a didactic framework for therapeutic management of selected endocrine disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 6XX Integrated Therapeutics VII: Women and Men's Health**Lec. 2./Credit 2 .**

In this course, students will be provided a didactic framework for therapeutic management of selected women's and men's health disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 6XX Integrated Therapeutics VIII: Rheumatology**Lec. 2./Credit 2 .**

In this course, students will be provided a didactic framework for therapeutic management of selected rheumatology and pain disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 6XX PPCP Skills Case Lab IV**Lec. 1./Credit 1 .**

In this course, students will apply the knowledge related to endocrine, women's & men health and rheumatology & pain and use the pharmacist's patient care process (PPCP) to collect, assess, plan, implement, follow up and evaluate patient cases based on scenarios across a variety of clinical settings. Students will learn communication abilities, how to collect a comprehensive patient history, develop an individualized patient-centered care plan in collaboration with other health care professionals, implement the care plan and conduct follow-up monitoring and evaluation using current, evidence-based guidelines and clinical trials.

PHA 6XX IPPE IV**Lec. 1./Credit 1 .**

This early practice experience will introduce pharmacy students to the fundamentals of pharmacy practice in the hospital setting. To complement their didactic curriculum, experiential experiences allow them to see pharmacy in action. The IPPE should be their opportunity to focus on the distributive and operational side of hospital pharmacy.

PHA 6XX Concentrated IPPE (Institutional)**Lec. 1./Credit 1 .**

This course is a three -week (120 hour) IPPE that students complete during the summer between the P2 and P3 years. Students are exposed to a health-system setting in which they gain experience in the operational, distributive, and patient care aspects of an institutional/hospital pharmacy. Students have opportunities to apply concepts and clinical knowledge from the P1 and P2 curriculum to patient care in the setting of an institutional pharmacy. They participate in patient care through the medication distribution process, prospective drug review, drug monitoring, and interprofessional interactions.

THIRD PROFESSIONAL YEAR

PHA 7XX Integrated Pharmacology & Medicinal Chemistry IV

Lec. 2./Credit 2 .

This is the fourth course in a five-part series. Students will explore basic concepts related to pharmacology, medicinal chemistry, and pharmacogenomics. An introduction to core principles of pharmacology will be discussed, a) mechanisms of action of drugs of various categories including biologics, b) basic pharmacodynamics and pharmacokinetics, c) adverse effects and side effects of drugs, d) mechanisms of drug-drug interactions, e) drug discovery and development, f) acute and chronic toxic effect of xenobiotics, including drug and chemical overdose and antidotes, and g) pharmacogenomic and genetic basis of disease. Students will learn the medicinal chemistry of natural and synthetic drug entities, their physicochemical properties, sources, derivatives, modes of biotransformation, and structure activity relationships. Students will be able to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles and apply them to making drug therapy decisions. Topics of focus include general principles of special populations, hematology, and oncology medications.

PHA 7XX Healthcare Administration II

Lec. 2./Credit 2.

This course will introduce students to 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 the tools useful to address the difficulties associated with implementing community and hospital based 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 on their future practice.

PHA 7XX Population & Public Health

Lec. 2./Credit 2.

This course will cover pertinent topics related to both population and public health. Population health is concerned with the overall health outcomes and factors that affect a group of individuals, while public health focuses on preventing and controlling diseases and promoting healthy lifestyles through coordinated efforts of various stakeholders. Students will understand how the social determinants of health relate to both population and public health. Students will use the social-ecological model as a framework to understand how various factors in a person's environment interact to influence their health behaviors and outcomes. They will also use the model to design interventions that address those multiple levels of influence to promote positive health behaviors and outcomes on specific public health topics.

PHA 7XX Personalized Drug Therapy Management**Lec. 2./Credit 2.**

This course will provide the key knowledge and tools to understand the fundamentals and practical implications of precision medicine, its opportunities and challenges. It will address precision-medicine era diagnostics, treatment selection, genetic counseling, pharmacogenomics, public health interventions, and biomedical research. It will also address data science and ethical issues.

PHA 7XX Integrated Therapeutics IX: Hematology & Oncology**Lec. 3./Credit 3 .**

In this course, students will be provided a didactic framework for therapeutic management of selected hematology and oncology disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 7XX Integrated Therapeutics X:**Lec. 3./Credit 3 .**

Special Populations (Pediatrics, Geriatrics ,Maternal Health, etc)

In this course, students will be provided a didactic framework for therapeutic management of selected special populations disorders (pediatrics, geriatrics, maternal health, etc). The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 7XX PPCP Skills Case Lab V**Lec. 1./Credit 1 .**

In this course, students will apply the knowledge related to hematology, oncology and special populations and use the pharmacist's patient care process (PPCP) to collect, assess, plan, implement, follow up and evaluate patient cases based on scenarios across a variety of clinical settings. Students will learn communication abilities, how to collect a comprehensive patient history, develop an individualized patient-centered care plan in collaboration with other health care professionals, implement the care plan and conduct follow-up monitoring and evaluation using current, evidence-based guidelines and clinical trials.

PHA 7XX IPPE V**Lec. 1./Credit 1 .**

In this early practice experience, students work with other healthcare providers and/or their students to learn about IPE competencies in the ambulatory care practice setting with a focus on roles/responsibilities, teams/teamwork, and interprofessional communication. In addition to the interactions that occur in the clinical setting, there is one intentional IPE activity where students from pharmacy and medicine will collaborate on a case-based problem as a means of introducing them to the roles/responsibilities and communication with the other discipline.

PHA 7XX Integrated Pharmacology & Medicinal Chemistry V**Lec. 2./Credit 2 .**

This is the fifth course in a five-part series. Students will explore basic concepts related to pharmacology, medicinal chemistry, and pharmacogenomics. An introduction to core principles of pharmacology will be discussed, a) mechanisms of action of drugs of various categories including biologics, b) basic pharmacodynamics and pharmacokinetics, c) adverse effects and side effects of drugs, d) mechanisms of drug-drug interactions, e) drug discovery and development, f) acute and chronic toxic effect of xenobiotics, including drug and chemical overdose and antidotes, and g) pharmacogenomic and genetic basis of disease. Students will learn the medicinal chemistry of natural and synthetic drug entities, their physicochemical properties, sources, derivatives, modes of biotransformation, and structure activity relationships. Students will be able to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles and apply them to making drug therapy decisions. Topics of focus include antimicrobials, immunology, and infectious diseases medications.

PHA 7XX Integrated Therapeutics XI: Clinical Microbiology & Infectious Disease Lec. 3./Credit 3 .

In this course, students will be provided a didactic framework for therapeutic management of selected clinical microbiology, immunology and infectious disease disorders. The course will reinforce and ensure competency in pathophysiology, pharmacology and clinical pharmacokinetics. The goal of this course is to prepare students to develop rational drug therapy plans using the PPCP process.

PHA 7XX Pharmacy Practice Lab & Patient Assessment III**Lec. 2./Lab 0./Credit 2 .**

This course introduces students to the knowledge, skill set, and resources needed to practice in a community and ambulatory care setting and clinical pharmacokinetics. Contextualized, competency-based, learning activities are used to develop the knowledge and skills in pharmacist patient assessment techniques related to provision of patient care, including patient interviewing, obtaining medical history from the EHR and patient, vital signs assessment, and point-of-care testing.

PHA 7XX Pharmacy Law & Ethics**Lec. 2./Credit 2 .**

The purpose of this course is to reinforce principles of law and ethics in pharmacy with a focus on those laws and ethical situations that are most encountered in a community pharmacy practice setting. The course will examine the federal and Virginia state laws that impact the practice of pharmacy, while emphasizing the legal and ethical principles applied by pharmacists in their daily decision-making. Students will learn the governmental framework within which pharmacy is practiced, as well as acquire an understanding of the laws, regulations, and the ethical responsibilities applicable to pharmacists so that they will be able to protect the public and ensure patients' well-being

PHA 7XX Health Equity & 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 Healthy People Initiative. Students will explore etiologies, statistics, severity, implications and possible solutions of the various disparities. Students will also be introduced to the concept of cultural sensitivity and humility, service learning, and volunteerism in programs that target underserved populations, explore the differences between equity and equality. They will be shown how they can make a difference in their communities and the lives of the patients they serve.

PHA 7XX PPCP Skills Case Lab VI**Lec. 1./Credit 1 .**

In this course, students will apply the knowledge related to clinical microbiology, immunology & infectious disease disorders and use the pharmacist's patient care process (PPCP) to collect, assess, plan, implement, follow up and evaluate patient cases based on scenarios across a variety of clinical settings. Students will learn communication abilities, how to collect a comprehensive patient history, develop an individualized patient-centered care plan in collaboration with other health care professionals, implement the care plan and conduct follow-up monitoring and evaluation using current, evidence-based guidelines and clinical trials.

PHA 7XX IPPE VI**Lec. 1./Credit 1 .**

In this early practice experience, students work with other healthcare providers and/or their students to reinforce IPE competencies in the hospital/health system practice setting as they perform medication reconciliation. The focus is on roles/responsibilities, teams/teamwork, and interprofessional communication.

FOURTH PROFESSIONAL YEAR

PHA 800,801,802 Seminar I, Seminar II, Seminar III**Lec. 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 pharmacy practice 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. This course will involve a comprehensive review of content for successful navigation of the NAPLEX & MPJE.

Prerequisites: Successful completion of all P-1, P-2, and P-3 courses.

PHA 8XX Internal Medicine**Lec. 4./Credit 4 .**

The course is an Advanced Inpatient Clinical Skills APPE and is 5 weeks (200 hours). This course provides students with experience in a clinical, acute care institutional, team-based environment. Students will be expected to utilize abilities learned throughout the pharmacy curriculum in order to achieve the goals of the rotation. These tasks include collecting patient-specific information, evaluating and monitoring drug therapy, educating patients or caregivers, responding to drug information inquiries, and functioning effectively within a health care team. Learning will be accomplished through a variety of ways including but not limited to team rounding, written projects, oral presentations, and other pharmacy related tasks.

PHA 8XX Ambulatory Care**Lec. 4./Credit 4 .**

The course is a required Outpatient Clinical Skills APPE and is 5 weeks (200 hours). This course provides students with experience in a multi-disciplinary out-patient or clinically focused ambulatory practice environment. Practice sites may include health-system based clinics, physician/ANRP/PA group practices, managed care clinics, advanced community pharmacies, or other advanced outpatient practice that provides direct patient care. Students will be expected to actively participate in the following tasks including but not limited to: collecting patient-specific information, evaluating and monitoring drug therapy, educating patients and caregivers about medications and medication related problems, responding to drug information or medication related inquiries from health care team members, and meeting general course objectives and site-specific objectives developed by the preceptor.

PHA 8XX Advanced Community Pharmacy**Lec. 4./Credit 4 .**

The course is required Advance Community Pharmacy APPE and is 5 weeks (200 hours). This course provides students with experience in community pharmacy setting. Students will focus efforts on developing abilities to provide patient-centered pharmacy care services and patient focused dispensing services. Student activities should include many of the following: disease state management, medication therapy management (MTM), preventative health screening(s), providing and documenting immunizations, specialty compounding, and patient education/counseling, or other advanced patient care activities. Students will actively participate in activities such as health-care provider interactions, patient and caregiver interactions, and OTC/Self-Care interactions and recommendations.

PHA 8XX Advanced Institutional Pharmacy (Hospital Practice)**Lec. 4./Credit 4 .**

The course is required Advanced Institutional Pharmacy Practice Experience (APPE) and is 5 weeks (200 hours). This course provides students with experience in an approved health system that prepares the student to function within a hospital or health-system of integrated pharmacy services. Emphasis is placed on the preparation, distribution, and control of medications, medication monitoring, and the ability to communicate with other healthcare professionals, and the ability to work in a team. This

rotation focuses on competence to practice in a hospital staffing position. It integrates problem-solving and clinical skills with the basics of inpatient medication distribution, monitoring, and control. The student is expected to demonstrate they are able to practice satisfactorily in this environment.

PHA 8XX Drug Information**Lec. 4./Credit 4 .**

The course is an elective Drug Information APPE and is 5 weeks (200 hours). This course enables students to demonstrate a systematic approach to drug information inquiries. Students will apply knowledge, skills, and abilities developed throughout the curriculum to respond to drug information questions by researching and evaluating relevant literature, applying research results to questions, and communicating appropriate answers to the inquirer(s) under the supervision of a preceptor.

PHA 8XX Geriatrics Elective**Lec. 4./Credit 4 .**

The course is an elective Geriatrics APPE and is 5 weeks (200 hours). This course focuses on the provision of clinical pharmacy services in a variety of settings with a focus on care for the elderly population. These sites may include community pharmacies, specialty clinics, rehabilitation hospitals, skilled nursing facilities (SNFs), home-based consult services, senior independent living, and assisted living facilities (ALFs). A focus is placed on the interdisciplinary care of the geriatric population. Student pharmacists will enhance knowledge of how to assess pharmacotherapy and appropriateness of drugs, determine how safely and effectively a patient can self-administer the therapy, and how to implement plans to ensure such safe and effective use. Students will be expected to utilize, refine, and apply their knowledge base of pharmacology, pharmacokinetics, pathophysiology, and therapeutics to enhance the quality of pharmaceutical care of the elderly.

PHA 8XX-8XX Special Interest Electives**Lec. 4./Credit 4 .**

The Special Interest Electives are advanced experience (5 weeks/ 200 hours) provides distinctive options for students to participate in areas such as compounding, nuclear pharmacy, academia, research, consulting, industry and other environments where patient care is not the primary focus. Specialty areas will vary according to preceptor and site availability. Students will apply knowledge, skills, and abilities developed throughout the curriculum to course and site-specific objectives and will demonstrate effective verbal and written communication skills in fulfillment of their responsibilities.