

DOCTOR OF PHARMACY

Recommended Course Sequence

P-1 Fall Semester

[[PHA-301]]	Found. of Pharm. Practice I	2
[[PHA-308]]	Pharm. and Health Care Delivery	3
[[PHA-311]]	Pharmaceutics I	4
[[PHA-313]]	Pharm. Calculations	1
[[PHA-327]]	Medical Microbiology	3
[[PHA-331]]	Anatomy/Physiology I	4
Total Credits		17

P-1 Spring Semester

[[PHA-302]]	Pharmaceutical Care Lab I	1
[[PHA-304]]	Foundations of Pharm. Practice II	2
[[PHA-310]]	Clinical Research Design	3
[[PHA-312]]	Pharmaceutics II	4
[[PHA-332]]	Anatomy & Physiology II	4
[[PHA-365]]	Medical Biochemistry* or elective	4
[[PHA-360]]	Self-Directed IPPE I	0
Total Credits		16-18

P-1 Summer

[[PHA-335]]	Intro. Pharmacy Practice Experience I (IPPE I)	2
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* [[PHA-365]] may be taken as [[CHM-365]] sophomore year; if successfully completed, 2-3 credit elective may be taken spring P1.

P-2 Fall Semester

[[PHA-401]]	Pharmacy Care Lab II	1
[[PHA-405]]	Pharmaceutical Care Systems	2
[[PHA-411]]	Biopharm/Clinical Kinetics	3
[[PHA-421]]	Pharmacotherapeutics I	2
[[PHA-423]]	Pharmacotherapeutics II	2
[[PHA-425]]	Pharmacotherapeutics III	3
	Elective	2-3

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Total Credits	16-17
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P-2 Spring Semester

[[PHA-402]]	Pharmacy Care Lab III	1
[[PHA-410]]	Biotechnology/ Immunology	3
[[PHA-412]]	Mgt. of Pharm. Operations	3
[[PHA-426]]	Pharmacotherapeutics IV	2
[[PHA-428]]	Pharmacotherapeutics V	4
[[PHA-430]]	Pharmacotherapeutics VI	2
[[PHA-440]]	IPPE II	1
[[PHA-460]]	Self-Directed IPPE II	0
	Elective	2-3
Total Credits		18-19

P-2 Summer

[[PHA-445]]	Intro. Pharmacy Practice Experience III (IPPE III)	2
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P-3 Fall Semester

[[PHA-501]]	Pharmacy Care Lab IV	1
[[PHA-503]]	Longitudinal Care I	1
[[PHA-505]]	Pharmacy Law	2
[[PHA-509]]	Economic Evaluation of Pharm.	3
[[PHA-521]]	Pharmacotherapeutics VII	2
[[PHA-523]]	Pharmacotherapeutics VIII	4
[[PHA-525]]	Pharmacotherapeutics IX	2
	Elective	2-3
Total Credits		17-18

P-3 Spring Semester

[[PHA-502]]	Pharmacy Care Lab V	1
[[PHA-504]]	Longitudinal Care II	1
[[PHA-526]]	Pharmacotherapeutics X	3

[[PHA-528]]	Pharmacotherapeutics XI	2
[[PHA-530]]	Pharmacotherapeutics XII	3
[[PHA-532]]	Integrative Medicine/ Nutrition	2
[[PHA-555]]	IPPE IV	0.5
[[PHA-560]]	Self-Directed III/IPPE V	0.5
	Professional Elective	2-3
Total Credits		15-16

P-4 Experiential Year

The APPE portion of the curriculum consists of 7 rotations for a total of 35 credit hours in various settings. Rotation #1 is 6 weeks in duration. Rotations #2-7 are 5 weeks in duration.

There are four required APPE rotations. In addition there are three elective APPE rotations. Information will be provided during the P-3 year.

[[PHA-510]]	General Medicine
[[PHA-511]]	Ambulatory Care
[[PHA-512]]	Community Practice
[[PHA-513]]	Health System
[[PHA-515]]	Naplex Review (this is a course, not a rotation)

PHA. PHARMACY

PHA-360, 460, 560. SELF-DIRECTED INTRODUCTORY PHARMACY PRACTICE EXPERIENCES I, II, III

Credits: 0.5 (PHA 560)

The Self-Directed (SD)-IPPE program is made up of three courses (SD-IPPE I, II, and III) over the span of the P 1 through P3 years. Collectively these courses consist of a total of 20 hours of pharmacy-related, service-oriented learning.

The Self-Directed Introductory Pharmacy Practice Experience (SD-IPPE) course is designed to expose students to various service-learning opportunities throughout their P1 through P3 years. This experience consists of 3 components: participation in and development of service-learning projects, reflection, and self-directed learning. Students may develop their own experiences or participate in opportunities offered by the School or professional organizations.

Requirements for service-learning hours will increase as the student progresses through the curriculum. Each student must complete a minimum of 2, 8, and 10 hours during the P1, P2, and P3 years, respectively (total 20 hours). Additional details are provided in the SDIPPE syllabus conveniently posted in E*Value.

Pre-Requisites

[[PHA-360]] pre-requisite is P1 standing

[[PHA-460]] pre-requisite is P2 standing and [[PHA-360]]

[[PHA-560]] pre-requisite is P3 standing and [[PHA-460]]

PHA-395-396, 495-496, 595-596. INDEPENDENT STUDY

Credits: 1-6

Independent study and research for advanced students in the field of the major under the direction of a faculty member.

Pre-Requisites

Approval of the department chairperson.

PHA-302, 401, 402, 501 & 502. PHARMACY CARE LAB I - V

Credits: 1 each

This five-semester sequence is designed to develop the student's ability to integrate and apply information as well as practice skills that are taught throughout the curriculum. The use of case studies, role-plays, presentations, and other active-learning strategies engages students in the learning process and requires them to synthesize information at increasing levels of complexity as the student moves through the course sequence. Requirement: P-1, P-2, or P-3 standing, as appropriate for each laboratory.

Pre-Requisites

Pre-requisites:

For [[PHA-401]], pre-requisite is [[PHA-302]]

For [[PHA-402]], pre-requisite is [[PHA-401]]

For [[PHA-501]], pre-requisite is [[PHA-402]]

For [[PHA-502]], pre-requisite is [[PHA-501]]

Co-Requisites

For [[PHA-401]], Co-requisites: [[PHA-421]], [[PHA-423]], and [[PHA-425]]

For [[PHA-402]], Co-requisites: [[PHA-426]], [[PHA-428]], and [[PHA-430]]

For [[PHA-501]], Co-requisites: [[PHA-521]], [[PHA-523]], and [[PHA-525]]

For [[PHA-502]], Co-requisites: [[PHA-526]], [[PHA-528]], and [[PHA-530]]

PHA-301. & PHA 304 FOUNDATIONS OF PHARMACY PRACTICE

Credits: 2

The purpose of this two-semester course is to provide the student with the foundational knowledge, skills and attitudes needed to practice pharmacy in the 21ST century. In particular, this course will focus on skills (communication, teamwork), attitudes and other content relevant to the practice of pharmacy. The school's team-focused approach to learning is emphasized throughout. This course fulfills experiential requirements and so students will have the opportunity to interact with pharmacists and patients.

Pre-Requisites

P-I standing.

PHA-308. PHARMACEUTICAL AND HEALTH CARE DELIVERY

Credits: 3

Examination of health and pharmaceutical delivery in the U.S. conducted from a societal perspective. Emphasis is on public policy, economic behavior and outcomes. Application will be made to various pharmaceutical sectors (e.g., retail, health systems, manufacturing). Students should gain an understanding of the factors driving transformation of health care delivery and the implications for future pharmacy practice. Lecture: three hours per week.

Pre-Requisites

P-I standing or consent of the instructor.

PHA-310. CLINICAL RESEARCH AND DESIGN

Credits: 3

In order to apply current research to patient care activities, one must first develop the skills to interpret studies. The purpose of this course is to learn how research studies are designed to answer specific clinical questions, and how the study design is important in interpreting the results of the studies. Students will apply research design concepts and statistical techniques to design, critically analyze, and interpret preclinical, clinical, and economic studies of pharmaceuticals and treatment plans. Lecture: three hours per week.

Pre-Requisites

[[MTH-150]] or equivalent and P-1 standing or consent of the instructor.

PHA-311. & PHA 312 PHARMACEUTICS I & II

Credits: 4

The study and application of physical chemical principles that are necessary for the design, development and preparation of pharmaceutical dosage forms. The study of quantitative skills necessary for an understanding of the basic and clinical pharmaceutical sciences, including skills in pharmaceutical calculations and extemporaneous preparation of dosage forms. Lecture: three hours per week. Laboratory and Recitation: three hours per week.

Pre-Requisites

P-1 standing or consent of the instructor. [[PHA-311]] is a prerequisite for [[PHA-312]].

PHA-313. PHARMACY CALCULATIONS

Credits: 1

The common mathematical processes that a pharmacist may encounter in professional practice are covered. Interpretation of the prescription, including Latin abbreviations, will be discussed. Medical terminology and the generic name, trade name, manufacturer, and classification of the top 100 drugs will also be presented. Lecture one hour per week.

Pre-Requisites

P-1 standing or permission of the instructor.

PHA-327. MEDICAL MICROBIOLOGY

Credits: 3

An overview of microbiology with special emphasis on pathogenic microbiology. Lecture: three hours per week.

Pre-Requisites

P-1 standing or consent of the instructor.

PHA-331. & PHA 332 MEDICAL ANATOMY AND PHYSIOLOGY I & II

Credits: 4

In-depth principles of human anatomy and physiology as well as an introduction to pathophysiology will be presented. Lecture: Two hours per week. Recitation and Lab: two hours per week.

Pre-Requisites

P-1 standing or consent of the instructor.

This course is restricted to enrolled Pharmacy students. Consideration may be given to non-pharmacy students with overall GPAs of 3.0 or greater, if there is room in the lecture and lab sessions, and with instructor approval. NOTE: [[PHA-331]] is a prerequisite for [[PHA-332]].

PHA-335. INTRODUCTORY PHARMACY PRACTICE EXPERIENCE I

Credits: 2

This course will provide introductory practice experience to students in the community setting. The course fosters the development of professionalism in an environment of practical application of knowledge, skills, and attitudes. Students will be faced with a variety of issues practical to community pharmacy. The student will take an independent learning approach under the supervision of a practicing community pharmacist. The course is two full-time weeks (80 hours) of experience.

Pre-Requisites

Successful completion of all required courses in the P-1 year, or permission of instructor.

PHA-365. MEDICAL BIOCHEMISTRY

Credits: 4

Introduction to basic biochemistry concepts, focusing on the structure and function of vitamins, proteins, and lipids as well as bioenergetics and major catabolic pathways. The catabolism of carbohydrates, fats and amino acids will be discussed including reactions and regulation. Common metabolic pathways of drugs, enzyme induction and metabolism down regulation will also be presented. Lecture: Four hours per week. Cross-listed with [[CHM-365]], [[BEGR-465]].

Pre-Requisites

[[CHM-232]] or [[CHM-235]] with a grade of 2.0 or better or permission of the instructor

PHA-405. PHARMACEUTICAL CARE SYSTEMS: DESIGN AND CONTROL

Credits: 2

Examines delivery of pharmaceutical products and services from a systems perspective in a variety of patient care settings. Focus is upon effectiveness, efficiency, and quality. Covers design of systems, establishment and monitoring of key indicators, total quality management and quality assurance agencies (e.g., JCAHO, NCQA). Lecture: two hours per week.

PHA-410. IMMUNOLOGY AND BIOTECHNOLOGY

Credits: 3

A discussion of nonspecific host defense mechanisms and a detailed description of specific immunity. Products that impart artificial active and passive immunity are presented. The concept of biotechnology is discussed together with the currently available products of genetic engineering that relate to immunology. The various immunological disorders and the immunology of cancer and HIV are discussed. Lecture: three hours per week.

Pre-Requisites

[[PHA-331]], [[PHA-332]], [[PHA-365]] or consent of the instructor.

PHA-411. BIOPHARMACEUTICS AND CLINICAL PHARMACOKINETICS

Credits: 3

Biopharmaceutics and Clinical Pharmacokinetics is designed to educate pharmacy students in the principles of pharmacokinetics and biopharmaceutics and how they assist in dosage regimen design and therapeutic efficacy evaluations. The impact of the physical and chemical forms nature of the drug and dosage forms will be studied as they relate to the absorption, distribution, metabolism, and elimination. The clinical pharmacokinetics of individual drugs will be examined with emphasis on clinical application based on patient presentations. Case studies, homework, and quizzes will be used to facilitate student learning. This course is roughly divided into two parts. The first is Biopharmaceutics/ Pharmacokinetics and the second is Clinical Pharmacokinetics. Lecture: three hours per week.

Pre-Requisites

P2 standing

PHA-412. MANAGEMENT OF PHARMACY OPERATIONS

Credits: 3

The principles of management, including personnel and financial management, will be covered as they apply to management of pharmacy operations in a variety of settings (e.g., community, health system, managed care). Lecture: three hours per week.

Pre-Requisites

[[PHA-308]] or consent of the instructor.

PHA-421. PHARMACOTHERAPEUTICS I: PRINCIPLES OF PHARMACOLOGY & MEDICINAL CHEMISTRY

Credits: 2

This course is the 1st of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This particular course will emphasize the most fundamental concepts central to drug therapy. A major emphasis will be placed on the interactions of drugs with their cellular targets in the human body, and the chemical properties of drugs that dictate their biological activity.

Pre-Requisites

[[PHA-310]], [[PHA-327]], [[PHA-331]], [[PHA-332]] and [[PHA-365]] or [[CHM-365]].

Co-Requisites

[[PHA-401]], [[PHA-423]], [[PHA-425]]

PHA-423. PHARMACOTHERAPEUTICS II: PRINCIPLES OF PHARMACOTHERAPEUTICS

Credits: 2

This course is the 2nd of a twelve module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for understanding Pharmacotherapeutics principles.

Pre-Requisites

[[PHA-310]], [[PHA-327]], [[PHA-331]], [[PHA-332]], and [[PHA-365]] or [[CHM-365]]

Co-Requisites

[[PHA-401]], [[PHA-421]], [[PHA-425]]

PHA-425. PHARMACOTHERAPEUTICS III: SELF-CARE AND DERMATOLOGY***Credits:** 3**Terms Offered:** Fall

This course is the 3rd of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of dermatological disorders and self-care issues.

Pre-Requisites

[[PHA-310]], [[PHA-327]], [[PHA-331]], [[PHA-332]], and [[PHA-365]] or [[CHM-365]], [[PHA-421]]

Co-Requisites

[[PHA-401]], [[PHA-421]], [[PHA-423]]

PHA-426. PHARMACOTHERAPEUTICS IV: GASTROINTESTINAL DISORDERS***Credits:** 2

This course is the 6th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of gastrointestinal diseases.

Pre-Requisites

[[PHA-421]], [[PHA-423]]

Co-Requisites

[[PHA-402]]

PHA-428. PHARMACOTHERAPEUTICS V: INFECTIOUS DISEASES***Credits:** 4

This course is the 4th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of infectious diseases.

Pre-Requisites

[[PHA-421]], [[PHA-423]]

Co-Requisites

[[PHA-402]]

PHA-430. JOINT, AUTOIMMUNE AND MUSCULOSKELETAL DISORDERS**Credits:** 2

This course is the 5th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of joint autoimmune and musculoskeletal diseases.

Pre-Requisites

[[PHA-421]], [[PHA-423]]

Co-Requisites

[[PHA-402]]

PHA-435. PHARMACOGENOMICS**Credits:** 2

Students will learn to understand how human genetics and genomics can be used to provide optimized drug therapy and patient care. Learning about this emerging field will enable students to better understand and manage new genomics-based diagnostic tools and make personalized treatment choices. Students will also spend time discussing societal and ethical implications of genetic testing and the resultant individualization of drug therapy, explain basic principles of human genetics and heredity, and more. Requirement: P-3 standing.

Pre-Requisites

*[[PHA-423]] is prerequisite to [[PHA-425]] - [[PHA-530]].

PHA-440. INTRODUCTORY PHARMACY PRACTICE EXPERIENCE II**Credits:** 1

This course will provide introductory practice experience to students in two health care settings: prescriber's clinics and a clinical pharmacy site. Students will have an independent approach to learning and gain a broader understanding of these settings and the role that pharmacists may play.

Pre-Requisites

Requirement: successful completion of all required courses in the P1 year, or permission of instructor.

PHA-445. INTRODUCTORY PHARMACY PRACTICE EXPERIENCE III**Credits:** 2

This course will provide introductory practice experience to students in the health-system setting. The course fosters the development of professionalism in an environment of practical application of knowledge, skills, and attitudes. Students will be faced with a variety of issues practical to this area of practice. The student will take an independent learning approach under the supervision of a practicing community pharmacist.

The course is two full-time weeks (80 hours) of experience.

Pre-Requisites

Requirement: Successful completion of all required courses in P-2 year, or permission of instructor.

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PHA-450. NEUROPHARMACOLOGY OF DRUGS OF ABUSE

Credits: 3

In-depth analysis of drugs of abuse, including pharmacokinetics, pharmacodynamics, tolerance, sensitization, physical dependence, and effects of drug use during pregnancy. Drug testing and substance abuse treatment strategies will also be discussed. Lecture: three hours.

Pre-Requisites

[[PHA-421]] or consent of the instructor.

PHA-452. EXTEMPORANEOUS COMPOUNDING

Credits: 3

Students will achieve basic and advanced skills in compounding pharmaceutical dosage forms for individualized patient therapy to replace a lack of commercially available products, and enhance therapeutic problem-solving between the pharmacist and physician to enhance patient compliance. Students will work independently on research assignments and compounding preparations. Lecture: one hour per week. Lab six hours per week.

Pre-Requisites

[[PHA-311]] and [[PHA-312]] and consent of the instructor.

PHA-456. CONCEPTS IN PRIMARY CARE

Credits: 2

The course is designed to allow students to explore and develop advanced knowledge and skills related to diseases and medications commonly encountered in a primary care environment. This course will be of value to pharmacy students seeking careers in ambulatory care pharmacy practice, community pharmacy, long-term care and population health management. Topics are presented in a case-based discussion format that includes multiple diseases and medications and through student-led mini topic discussions.

Pre-Requisites

[[PHA-311]] and [[PHA-312]]

PHA-488. ASPECTS OF CARING FOR THE PAIN PATIENT

Credits: 2

This course is an interactive and interprofessional approach to the assessment and management of pain. Various teaching and learning strategies will allow students to develop and appreciate the understanding of the social, psychological, physical, spiritual and ethical implications of pain.

Pre-Requisites

[[PHA-331]], [[PHA-332]] and [[PHA-421]], P3 standing or consent of instructor.

PHA-503. AND PHA 504 LONGITUDINAL CARE LAB I & II (INTRODUCTORY PHARMACY PRACTICE EXPERIENCE VI AND VII)

Credits: 1

Students will follow a patient or patients over an extended period of time in a medical or home setting. Pharmaceutical knowledge and skills will be applied in communications, health assessment, monitoring or pharmacotherapy, evaluation of both humanistic and clinical outcomes. Issues of health care, cost access, and quality as revealed through each patient's interaction with health and pharmaceutical care systems will be addressed. Three hours per week. Students are responsible for transportation to and from all off-campus experiential sites.

Pre-Requisites

[[PHA-503]] is the prerequisite for [[PHA-504]].

PHA-505. PHARMACY LAW

Credits: 2

Terms Offered: Fall

The study of federal and state statutes, regulations and court decisions which control the practice of pharmacy and drug distribution. Civil liability in pharmacy practice and elements of business and contract law will be covered. Lecture: two hours per week.

PHA-506. CONCEPTS IN INFECTIOUS DISEASE

Credits: 2

Terms Offered: Fall

This course is offered to Fall semester to P3 students and is designed to allow students to explore and develop advanced knowledge and skills related to infectious diseases. This course will be of value to pharmacy students seeking careers in infectious diseases whether it be in ambulatory care pharmacy practice, community pharmacy, long-term care and population health management. Students will be heavily leading the course through presentations, cases and poster presentations. Active learning techniques are used throughout the course to build critical thinking and problem solving skills. Emphasis is placed on the integration of disease states and approaches to practice management. Assignments that engage students in lifelong learning and community engagement are additional features of the course.

Pre-Requisites

P3 standing

PHA-509. ECONOMIC EVALUATION OF PHARMACEUTICAL PRODUCTS AND SERVICES

Credits: 3

Introduction to commonly used economic evaluation methods (e.g., cost-minimization, cost-utility, cost-benefit, cost-effectiveness) as applied to pharmaceutical products and services. Quality of life and outcomes research will also be explored. Emphasis is on understanding evaluation methods and research design and interpreting the relevant literature for practice applications. Lecture: three hours per week.

Pre-Requisites

[[PHA-308]] and [[PHA-310]] or consent of the instructor.

PHA-510. GENERAL MEDICINE ADVANCED PHARMACY PRACTICE EXPERIENCE

Credits: 5-6

Integration of the basic pharmacy related concepts to the delivery of pharmaceutical care in general medicine practice. Clinical practice: 40 hours per week for a total of five to six weeks.

Pre-Requisites

Successful completion of P1-P3 curriculum in full.

PHA-511. AMBULATORY CARE ADVANCED PHARMACY PRACTICE EXPERIENCE

Credits: 5-6

Integration of the basic pharmacy related concepts to the delivery of pharmaceutical care in ambulatory care settings. Clinical practice: 40 hours per week for a total of five to six weeks.

Pre-Requisites

Successful completion of P1-P3 curriculum in full.

PHA-512. COMMUNITY ADVANCED PHARMACY PRACTICE EXPERIENCE

Credits: 5-6

Integration of the basic pharmacy related concepts to the delivery of pharmaceutical care in community practice settings. Clinical practice: 40 hours per week for a total of five to six weeks.

Pre-Requisites

Successful completion of P1-P3 curriculum in full.

PHA-513. HEALTH SYSTEM ADVANCED PHARMACY PRACTICE EXPERIENCE

Credits: 5-6

Integration of the advanced pharmacy related concepts to the delivery of pharmaceutical care in the health system setting. Clinical practice: 40 hours per week for five to six weeks.

Pre-Requisites

Successful completion of P1-P3 curriculum in full.

PHA-515. NAPLEX PREPARATION

PHA-521. PHARMACOTHERAPEUTICS VII: PULMONARY DISORDERS*

Credits: 2

This hybrid course is the 7th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of pulmonary diseases.

Pre-Requisites

[[PHA-421]], [[PHA-423]]

Co-Requisites

[[PHA-501]]

PHA-523. PHARMACOTHERAPEUTICS VIII: CARDIOVASCULAR DISORDERS*

Credits: 4

This course is the 8th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of cardiovascular diseases.

Pre-Requisites

[[PHA-421]], [[PHA-423]]

Co-Requisites

[[PHA-501]]

PHA-525. PHARMACOTHERAPEUTICS IX: RENAL DISORDERS*

Credits: 2

This course is the 9th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of renal diseases.

Pre-Requisites

[[PHA-421]] [[PHA-423]]

Co-Requisites

[[PHA-501]]

PHA-526. PHARMACOTHERAPEUTICS X: ENDOCRINE DISORDERS & WOMEN'S/MEN'S HEALTH ISSUES*

Credits: 3

This course is the 10th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of endocrine diseases.

Pre-Requisites

[[PHA-421]] [[PHA-423]]

Co-Requisites

[[PHA-502]]

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PHA-528. PHARMACOTHERAPEUTICS XI: NEOPLASTIC DISEASES*

Credits: 2

This course is the 11th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of neoplastic diseases.

Pre-Requisites

[[PHA-421]] [[PHA-423]]

Co-Requisites

[[PHA-502]]

PHA-530. PHARMACOTHERAPEUTICS XII: CENTRAL NERVOUS SYSTEM DISORDERS*

Credits: 3

This course is the 12th of a twelve-module sequence that will integrate pharmacology, medicinal chemistry, pathophysiology and therapeutics. This team taught course is designed to provide students with an opportunity to learn, observe and apply concepts of these four content areas in an integrated manner. Concepts in each of these content areas will be emphasized to provide the necessary information for pharmaceutical management of CNS and mental health disorders.

Pre-Requisites

[[PHA-421]] [[PHA-423]]

Co-Requisites

[[PHA-502]]

PHA-532. INTEGRATIVE MEDICINE AND NUTRITION

Credits: 3

The purpose of the Alternative Medicine and Nutrition course is to help students learn to integrate nonconventional treatments (natural medicines, manipulation therapy, acupuncture, etc.) into traditional treatment strategies. Additionally, students will learn about nutrition support practices, including enteral and parenteral care.

Pre-Requisites

[[PHA-331]], [[PHA-332]], [[PHA-365]] or consent of the instructor.

PHA-534. INTRODUCTION TO HOSPITAL PHARMACY PRACTICE

Credits: 2

This course introduces students to the practice of pharmacy within a hospital setting. Topics discussed include the accreditation process for hospitals, career options and residency or fellowship training, medication formulary management, automation and technology in hospital pharmacies, medication calculations, medication safety, clinical pharmacy practice, and sterile product preparation.

PHA-536. PRINCIPLES OF ADVANCED COMMUNITY PHARMACY MANAGEMENT

Credits: 2

This course is designed to provide a foundation for students interested in pursuing the development and implementation of advanced clinical programs in a community pharmacy. The student will be introduced to principles in pharmacy and fiscal management, professional development, and the management and legal issues relating to clinical pharmacy services. Didactic and active learning techniques will be employed throughout the course and the student will be required to develop a business plan. Lecture two hours per week.

Pre-Requisites

P-2 or P-3 standing or consent of the instructor.

PHA-538. PEDIATRIC PHARMACOTHERAPY

Credits: 2

This course is designed to expand the students current knowledge base regarding the pediatric population and to introduce the core concepts involved in the care of this special population. The course prepares students to identify and address drug-related problems in pediatric patients and to demonstrate competency within those areas. This will be accomplished by completion of case scenarios, actual patient presentations, and a take-home examination. An on-site visit to the Children's Hospital of Philadelphia (CHOP) is required. Lecture two hours per week.

Pre-Requisites

P-2 or P-3 standing

PHA-540. COMPREHENSIVE DIABETES MANAGEMENT

Credits: 3

Terms Offered: Spring

This course provides a multidisciplinary foundation for health professionals in the principles of diabetes management. Students who successfully complete the course will have knowledge and the basic skill set that is needed to begin practicing diabetes management. The majority of this course is independent self-study of online lectures, but there are mandatory on-campus discussions and exams.

Pre-Requisites

Requirement: P-2 or P-3 standing.

PHA-544. MANAGED CARE PHARMACY

Credits: 2

Terms Offered: Spring

This elective is intended to help future pharmacists interested in any area of practice better understand the clinical and business decision-making processes of the health care system. The elective will introduce and reinforce the concepts of population health and value, explore tools available to limit healthcare spending, and discuss unique ways pharmacists can be involved in improving patient care. This course will be offered during the spring semester each year.

Pre-Requisites

P2 or P3 standing.

PHA-552. PRINCIPLES OF BIOORGANIC AND MEDICINAL CHEMISTRY**Credits:** 3

This will be an introductory course, the aims of which are to provide the principles of bioorganic and medical chemistry, including an understanding of drug structure-activity relationships, prediction of the physicochemical properties of a drug, basic knowledge of the major pathways of drug metabolism, and factors that can contribute to drug-drug interactions.

Pre-Requisites

[[CHM-231]], [[CHM-232]] or [[CHM-235]], [[CHM-237]]; [[PHA-365]] or [[CHM-365]]

PHA-555. INTRODUCTORY PHARMACY PRACTICE EXPERIENCE IV**Credits:** 1-half

This course will provide introductory practice experience to students in the clinical telepharmacy setting. Students will gain a broader understanding of this setting and the role that pharmacists may play. Requirement: successful completion of all required courses in the P3 year, or permission of instructor.

Pre-Requisites

P-3 standing.

PHA-556. ROLE OF PHYTOCHEMICALS ON HEALTH AND DISEASE**Credits:** 2

Students will learn the basic concepts and classification of phytochemicals present in our daily diet, followed by the study of specific phytochemicals and their relation to human health and disease. Basic mechanisms and pathways through which phytochemicals act and alter will be discussed.

Students will have an opportunity to gain an in-depth understanding of a specific phytochemical of their choice or any other phytochemical designated by the instructor through a research review paper and an in-class presentation.

Pre-Requisites

P-3 standing.

PHA-558. PRINCIPLES OF TOXICOLOGY: FROM BEAKER TO BEDSIDE**Credits:** 2

This toxicology elective is designed to provide the student with introductory knowledge of the molecular mechanisms of action and clinical management of poisons. The course will begin with introductory concepts such as history, mechanisms of cell injury and toxicant disposition. The student will then be exposed to the fundamental principles of managing an acutely poisoned patient. Toxicology lectures on each major organ system will prepare students for group presentations. The aims of student presentations will be to achieve a greater understanding of the clinical management of the poisoned patient, and to hone presentation skills. To the extent that is feasible, the course will involve lectures, or other learning experiences, led by external specialists.

The scope of poisons that will be discussed is broad, and includes environmental toxins, industrial toxicants, and drugs. Specific agents will include heavy metals, volatile solvents, common plant toxins, rodenticides, and several drugs. Students may be expected to participate in one laboratory exercise, wherein they will learn a fundamental method to characterize the mechanism and/or extent of cell death induced by a toxicant.

Pre-Requisites

P-2 or P-3 standing or permission of the instructor.

PHA-599. A, B, AND C ELECTIVE ADVANCED PHARMACY PRACTICE EXPERIENCE ROTATIONS**Credits:** 5-6**Terms Offered:** Fall

Advanced pharmacy practice experience involved in different aspects of pharmaceutical care. (Courses to be determined.) Clinical practice 40 hours per week for a total of five weeks.

Pre-Requisites

Successful completion P-1 - P-3 curriculum in full.