

DOCTOR OF PHARMACY

Available on the Jackson Campus

Union University's Doctor of Pharmacy program is accredited by the Accreditation Council for Pharmacy Education (ACPE, www.acpe-accredit.org), the national organization that accredits Doctor of Pharmacy programs offered by Colleges and Schools of Pharmacy in the United States and selected non-U.S. sites. Questions about the status of the University's accreditation may be posed to the Dean of the College of Pharmacy's office (731.661.5958) or to ACPE (312.664.4652).

College of Pharmacy Vision

To transform students, patients, pharmacists, and community, through innovative pharmacy education and research in a Christ-centered environment.

College of Pharmacy Mission

To develop comprehensively trained, patient-centered practitioners of strong personal and professional character, equipped to meet the demands of an ever-changing health care environment.

College of Pharmacy Goals

The College of Pharmacy (COP) strives to achieve its vision and mission by:

- Promoting an *excellence-driven* academic culture that instills knowledge and advances understanding of the biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences,
- Providing a *Christ-centered*

clinical sciences to explain drug products and action, evaluate scientific literature, solve therapeutic problems, provide patient-centered care and promote population health (1. Learner

Financial Assistance

Financial aid information for graduate students is available on our website at www.uu.edu/financialaid/graduate/. Generally, graduate students may be eligible for Federal Direct student loans or private alternative student loans, depending on the program of study and the eligibility of the borrower. Union University is also approved by the Department for Veterans Affairs to offer educational benefits to veterans, reservists, and dependents of

Please see the Master of Business Administration section of the Graduate Catalog for MBA core coursework and prerequisite coursework. MBA core coursework can be done on either Union's Jackson or Germantown campuses or a combination of the two. Please contact the MBA Director (731-661-5341) in the McAfee School of Business for any questions you may have regarding the Pharm.D./MBA Dual Degree Program.

Course Descriptions: Pharmacy (PHRM)

BPE: Board-preparatory elective

NBPE: Non board-preparatory elective

510. Advanced Human Gross Anatomy (2)

Prerequisites: BIO 221 & 222.

Reciprocal Credit: BIO 510

This course will incorporate the dissection of cadavers and viewing of anatomical models in understanding the nervous, endocrine, cardiovascular, respiratory, digestive, and urinary systems of the human body. Additional emphasis is placed on the needs of professional health care personnel.

519. Clinical Microbiology (2)

Reciprocal credit: BIO 519

A review of the organisms associated with infections in humans with application directed towards those most commonly encountered in the United States. This will focus on how the body responds to various types of infections, and relevant clinical treatment methods.

524. Immunology Concepts (1)

Reciprocal credit: BIO 524

A survey of the immune system. This will be integrated with how the body responds to various types of immunologic disorders and relevant clinical treatment methods.

700. Introduction to Pharmacy (2)

Introduction to the practice of pharmacy for first year students including an introduction to the profession and its evolving opportunities, what a pharmacist is, their role in the various settings of the health care system including drug distribution, drug utilization and the use of technology and supportive personnel.

701. Special Projects in Community Practice (2) (BPE)

This course provides advanced knowledge of clinical topics and emerging practice developments as they relate to community practice. Students will learn aspects of community practice beyond the traditional dispensing role of the pharmacist and gain skills to aid them in becoming community pharmacy practice innovators.

702. Ambulatory Care (2) (BPE)

An elective course designed to strengthen the student's understanding of diseases or illnesses common in an adult ambulatory care practice. The course utilizes group discussion of primary literature and the development of clinical practice guidelines. Student presentations and other active learning activities will extend knowledge beyond that provided in previous coursework.

703. Introduction to Population Pharmacokinetics (2) (BPE)

This course provides students an introduction to the theory and methods of population pharmacokinetic and pharmacodynamics analysis with nonlinear mixed-effects models. The course includes hand-on modeling experiences and discussion of advanced topics such as Bayesian estimation, covariate analysis, and the role of computer simulation. Students will evaluate population pharmacokinetic literature and FDA guidance documents on related issues.

704. Personal Financial Management (2) (NBPE)

An overview of personal financial management. This course will include tools and resources that when implemented will help achieve financial goals.

705. Pharmaceutical Calculations (2)

This course introduces the prescription, prescription notation and abbreviations, basic pharmaceutical calculations, statistics, and the mathematics of chemical kinetics and pharmacokinetics.

706. Advanced Cardiovascular Pharmacotherapy (2) (BPE)

An elective providing the student with a more thorough study of cardiology and cardiovascular topics in application of the therapies and techniques covered.

707. Pain Management (2) (BPE)

An elective course providing an introduction to pain management, including classifications, pain assessments, pharmacological and non-pharmacological treatment options of a variety of nociceptive and neuropathic pain syndromes (cancer pain, sickle cell disease, diabetic neuropathy, chronic pain syndromes, etc).

708. Community-Engaged Service Learning (2) (BPE)

An introduction to experiences in community involvement and social/behavioral research through service learning. Service learning is a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development.

709. Drugs of Abuse (2) (BPE)

A course examining current knowledge about drugs and substances of abuse or misuse. Emphasis will be given to societal issues and the role a pharmacist can play as a provider of drug facts and information.

710. Medical Terminology (1)

This course provides an introduction to the origin and definition of medical terms used in various healthcare settings. In addition, it provides an introduction into body structures, diseases, and treatments arranged in an organ system manner.

711. Health Care and Missions (2) (NBPE)

This elective course provides students an opportunity learn about another culture and participate in a short-term health care mission trip. Students will learn to coordinate drug distribution, make pharmacotherapy recommendations within a limited formulary, and provide patient education in a setting with many communication barriers. Students, guided by faculty, will learn to provide patient care in this unique environment.

712. Oncology (2) (BPE)

Elective course to provide students advanced exposure to oncology building on topics in PHRM 769. Students are introduced to different malignant disease states and their common chemotherapeutics regimens, the principles of concern prevent and screening, pharmaceutical care to manage short and long-term side effects from cancer and treatments, and appropriate management and handling of cytotoxic medications.

713. Critical Care (2) (BPE)

Elective course designed to strengthen student's knowledge of common critical care topics with emphasis on applications of primary research in various disease states. The course will utilize group discussion of literature including reviews, guidelines, and primary research articles on selected topics in the area of critical care therapeutics. Students will give presentations to extend their knowledge beyond that provided in previous coursework.

714. IPE I (1)**715. IPE II (1)****720. IPE III (1)**

The Interprofessional Practice & Education (IPE) course is one of three designed to focus on the development of interprofessional skills required for collaboration with other healthcare providers in contemporary pharmacy practice. The primary emphasis will be on roles and responsibilities of healthcare team members and collaboration with other healthcare providers to provide interprofessional patient care.

716. Principles of Pharmaceutical Sciences (3)

An introduction to the chemical and physical properties of medicinal agents. It will provide a foundational understanding of key concepts in the pharmaceutical sciences in preparation for coursework in medicinal chemistry, pharmacology and pharmaceuticals.

717. Advanced Pain Management (2) (BPE)

Elective course building on PHRM 707, an in-depth overview of pain management, including pain classifications, assessment, pharmacological and non-pharmacological treatment options of a variety of nociceptive and neuropathic pain syndromes.

718. Non-Prescription Drugs/Counseling (3)

Designed to acquaint students with indications, actions, possible adverse events and contraindications of non-prescription drugs with an emphasis on communication with patients and providers. Students will be evaluated on their ability to obtain medical histories and counseling skills.

719. Toxicology (2) (NBPE)

An elective course designed to help students develop an understanding of the principles of toxicology through lectures, class discussion, and developing and giving oral presentations about current toxicological issues within the field of pharmacy.

721. Advanced Pharmacokinetics (2) (BPE)

Building on foundational principles, students will use analysis software to perform nonlinear regression of pharmacokinetic data. They will evaluate literature and become familiar with FDA guidance documents for clinical pharmacology and biopharmaceutics topics. Discussion will include advanced topics as optimal sampling design, pharmacokinetic clinical trial design, enterohepatic recirculation models and chronopharmacokinetics.

722. Pharmacy Practice and Applied Jurisprudence (1)

A survey of skills and resources needed to navigate contemporary pharmacy practice. Students will interpret legislative and regulatory applications as they work through case-based scenarios. Students will explore safety concerns within the pharmacy workplace and relate solutions to address them. Students will study management and business principles to effectively achieve shared goals. Students will examine the implications of precision medicine on the practice of pharmacy.

723. Drug Information and Informatics (3)

PHRM 723 covers the fundamental concepts of drug information practice, clinical trial design and analysis, and pharmacy informatics. It is designed to introduce key concepts and establish a basic knowledge and skillset. Future courses (e.g. PHRM 772) will develop mastery of the interpretation of clinical data and application of the evidence in the delivery of individualized pharmaceutical care. This course also introduces a variety of topics related to the medication use system.

724. Diabetes Management (2) (BPE)

An elective course designed to provide students further exposure to diabetes topics including but not limited to: guidelines, drug selection algorithms, nutrition and insulin dosing, adjustment, and titration. Topics presented by lecture, discussion, and simulation.

725. Principles of Pharmacology I (2)

The first of a two-course sequence that integrates concepts in physiology and pathophysiology to understand drug mechanisms and their impact on disease. The course uses an organ systems approach to cover the various drug classes.

726. Pharmacological Basis of Drug Action I (3)

Introduction course for first year students discussing drugs for cholinergic, adrenergic, cardiovascular, pulmonary and endocrine system. Drug class, mechanism of action, drug interaction and toxicities, pharmacodynamics and pharmacokinetics are discussed.

727. Institute on Alcoholism and Drug Dependencies (2) (BPE)

This course serves as an introductory or refresher session and a networking opportunity to provide information, motivation and guidance for student pharmacists who currently participate in or wish to become involved in the planning, implementation, or strengthening of state-level and campus-level programs, to help and assist pharmacists or student pharmacists whose competence to perform their responsibilities has become impaired due to alcoholism or other drug dependencies by assisting them in finding treatment, ongoing recovery and reentry into the practice of pharmacy or their pharmacy education; and to better prepare attendees to provide appropriate assistance and support to clients affected by alcoholism and other drug dependencies. Students may only be enrolled in this course after acceptance into the Institute on Alcoholism and Drug Dependencies by the American Pharmacists Association and are only eligible to receive elective credit upon completion of the institute requirements and course requirements. Institute completion requirements include one week of on-site training in Salt Lake City at the University of Utah.

728. Chemical Basis of Drug Action I (3)

An introduction to the chemical and physical properties of medicinal agents through discussion of the relationships of structural properties of drugs to their pharmacological properties, absorption, distribution, metabolism, chemical activity, and mechanism of action.

729. Immunization Training and Certification (1)

The APhA certification course highlights the role of vaccines in the prevention of infectious diseases, the role of the pharmacist in promoting and providing vaccines to patients, and steps to implementing an immunization program into various pharmacy practice settings. Injection technique will be taught, practiced, and assessed.

730. Introduction to Community Practice (2)

This P-1 course is one of five designed to focus on the development of professional skills required for contemporary pharmacy practice. The primary emphasis is on drug distribution in the community setting, communication skills and interprofessional patient care. During this 2-week (80 contact hours) rotation, students are exposed to the role and responsibilities of the pharmacist in community practice and the importance of the pharmacist in patient care.

731. Introduction to Institutional Practice (2)

This P-1 course is one of five designed to focus on the development of professional skills required for contemporary pharmacy practice. The primary emphasis is on drug distribution in the institutional setting, communication skills and interprofessional patient care. During this 2-week (80

740. Pharmacotherapy I (2)

741. Pharmacotherapy II (3)

750. Pharmacotherapy III (3)

751. Pharmacotherapy IV (3)

760. Pharmacotherapy V (3)

761. Pharmacotherapy VI (2)

769. Pharmacotherapy VII (2)

The Pharmacotherapy courses focus on management of diseases and conditions. Students apply knowledge of pathology, pathophysiology, diagnosis, clinical presentation, classification, goals of therapy, pharmacotherapy, non-pharmacological therapy, considerations for special populations, and patient counseling.

744. Pharmacy Jurisprudence (2)

An overview of state and federal pharmacy practice laws that govern technician, pharmacy intern, and pharmacist practice and control the manufacturing, distribution, prescribing, and dispensing of drug products.

746. Introduction to Community Practice II (2)

This P-2 course is one of five designed to focus on the development of professional skills required for contemporary pharmacy practice. The primary emphasis is on drug distribution in the community setting, communication skills and interprofessional patient care. During this 2-week (80 contact hours) rotation, students will have the opportunity to build upon didactic courses and previous experiential rotations to further their knowledge and abilities to practice as pharmacists in the community setting.

749. Principles of Pharmacology II (2)

The second of a two-course sequence that integrates concepts in physiology and pathophysiology to understand drug mechanisms and their impact on disease. The course uses an organ systems approach to contribute to the

764. Pharmaceutics I Lab – Compounding (1)

This lab course is designed for PY2 students to apply some of the basic principles and concepts they learned from physical pharmacy (Pharmaceutics 1) as a means of performing pharmaceutical compounding. This course will emphasize an understanding of the formulation and physiological factors involved in the delivery and absorption of drugs through a variety of routes of administration and dosage forms. The formulation, stability, and packaging of various dosage forms will be studied. Students will learn and

774. Clinical Foundations (2)

This course is designed provide an update and systematic review of key disease states and related drugs. Students will be required to demonstrate competency in their knowledge of the Top 300 drugs and application of these drugs to the clinical management of commonly encountered diseases.

775. Pharmacy Foundations (2)

This course is designed provide an update and review of key foundational concepts in the pharmaceutical sciences. This includes, but is not limited to, pharmaceutical calculations, pharmacokinetics, pharmaceuticals, medicinal chemistry, pharmacology, and pharmacy administration.

776. Internal Medicine Pharmacotherapy (2) (BPE)

This course is designed strengthen the student's knowledge of general internal medicine topics with emphasis on application of primary research and current guidelines in various disease states. The course will utilize formal lectures as well as group discussion of primary literature including reviews, guidelines and primary research articles on selected topics in the area of internal medicine therapeutics. Students will also give presentations on other related topics that will extend their knowledge beyond that provided in previous coursework.

777. Pediatric Pharmacotherapy (2) (BPE)

This course will provide pharmacy students with a didactic learning experience that will develop a solid foundation in pediatric pharmacy. During this elective, students will develop and refine their clinical skills that will enhance future rotations, especially in the field of pediatrics. The student will become familiar with common pediatric disease states and therapies.

778. Drug-Induced Diseases (2) (BPE)

This is an elective course designed to help students understand the prevention, detection, and management of drug induced diseases in an organ system specific manner. The goal of this course is to prepare students to recognize some of the most common and serious drug induced conditions and have awareness of the possible causes. The course will provide the basis for the evaluation and monitoring of these adverse effects. This course will also explore the FDA approval process, principles of medication safety, and their impacts on healthcare. Evaluation of student's performance will be achieved through presentations, quizzes, exams, and class participation.

779. Medication Therapy Management (1-4)

This course offers pharmacy students the opportunity to complete the coursework provided by the American Pharmacist Association for the Delivering Medication Therapy Management Services certification. In addition to completing this coursework, students will have the opportunity to perform practice MTM cases and to review problems commonly identified in medication therapy reviews. following the elective course, students who choose to perform the necessary MTM cases will be awarded the APhA Delivering Medication Therapy Management Services certification. All courses and application to the program must be defined prior to travel.

780. Study Abroad Programs (1-4)

All courses and application to the program must be defined prior to travel.

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Advanced Pharmacy Practice Experience (APPE)

Each Advanced Pharmacy Practice Experience (APPE) is designed to offer the student increased experience in unique and progressive pharmacy practice settings. Students are exposed to the roles and responsibilities of the pharmacist in practice and the importance of the pharmacist in direct and indirect patient care. Students will be expected to hone practice skills, professional judgement, behaviors, attitudes and values, confidence, and a sense of personal and professional responsibility to practice both independently and collaboratively in an Interprofessional, team-based care environment. Courses are taught by full-time faculty members or by practicing pharmacists appointed by the University as Clinical Preceptors. APPEs take place at approved institutions and pharmacies. Most sites are located in West Tennessee; however the College has approved over 400 clinical preceptors working at 300 sites in 30+ states across the nation.

Each course is completed during a calendar month; rotations usually begin on the first and end on the last weekday of the month. The typical work week consists of 40 hours Monday-Friday; however evening and weekend hours are permitted. Students are expected to work a minimum of 160 contact hours during the rotation; exact schedules are set by the Clinical Preceptor.

Doctor of Pharmacy students are required to complete ten APPE courses. APPE courses cannot begin until the student has completed all required didactic courses and introductory pharmacy practice experiences.

Students must complete the following six required APPEs:

- APPE 700. Advanced Institutional Practice
- APPE 710A. Advanced Chain Community Practice
- APPE 710B. Advanced Independent Community Practice
- APPE 720. Ambulatory Care (any section)
- APPE 730A. Acute Care Internal Medicine
- APPE 730. (any section)

Students must complete four elective APPE courses, which include the following:

- APPE 710. (Any section, limited to one course in addition to the required courses stated above)
- APPE 720. (Any section, not limited in number of courses)
- APPE 730. (Any section, not limited in number of courses)
- APPE 740, 750, or 770. (Any section, limited to two courses)

700. Advanced Institutional Practice (4)

This APPE is a required course designed to offer the student advanced experience in an institutional pharmacy practice setting. Students will be expected to apply knowledge and skills learned during the experience and previously in the curriculum in order to accurately and efficiently fill prescription orders; comply with state and federal laws as well as regulations from accrediting agencies; identify and resolve medication-related problems; collect patient specific information for the development of an evidence-based treatment plan; respond to drug information questions; communicate effectively, orally and in writing, with patients, caregivers, and other health professionals; actively participate as an interprofessional healthcare team member; and conduct themselves in a professional manner.

710. Advanced Community Practice (4 each)

Two APPEs in this section are required courses, 710A and 710B. One additional course can be completed as an elective APPE. Each course is designed to offer the student advanced experience in various community pharmacy practice settings.

730. Acute Care Pharmacy Practice (4 each)

Two APPEs from this section are required, including Acute Care Internal Medicine and any other course listed. Additional courses in this section may be completed as elective APPEs. These courses are designed to offer the student advanced experience in acute care pharmacy practice settings. Students are expected to apply knowledge and skills learned during the experience and previously in the curriculum in order to accurately and efficiently communicate with patients, caregivers, and health care professionals; collect and analyze patient information for the development of an evidence-based treatment plans in the acute care setting; appropriately documents interventions in the medical record; identify and resolve medication-related problems; respond to drug information questions; actively participate as an interprofessional healthcare team member; and conduct themselves in a professional manner.

- 730A. Internal Medicine**
- 730B. Infectious Disease**
- 730C. Cardiology**
- 730D. Women's Health**
- 730E. Neonatology/Pediatrics**
- 730F. Oncology**
- 730G. Critical Care**
- 730H. Nutrition**
- 730J. Psychiatry**
- 730K. Geriatrics**
- 730L. AIDS Care**
- 730M. Emergency Medicine**
- 730N. Surgery**
- 730P. Transplant**
- 730R. Institutional MTM**
- 730S. Neurology**
- 730T. Medication Safety**
- 730U. Geriatric Team Practice**
- 730V. Hospice/Palliative Care**
- 730W. Long Term Care**
- 730X. Pulmonary Medicine**
- 730Y. Pediatric Oncology**
- 730Z. Pediatric Transplant**

740. Practice Management (4 each)

These Advanced Pharmacy Practice Experiences (APPEs) are elective courses designed to offer the student advanced experience in the management of pharmacy practice in various settings. Students are expected to apply knowledge and skills learned during the experience and previously in the curriculum in order to identify operational, clinical, or business-related problems; collect and analyze data in order to manage a patient-centered practice; communicate effectively with healthcare professionals, patients/caregivers, and the public; demonstrate innovation and leadership, and conduct themselves in a professional manner.

- 740A. Institutional Practice Management**
- 740B. Community Practice Management**
- 740D. Management Clinical Practice**
- 740E. Pharmacy Association Management**

750. Specialty Pharmacy Practice (4 each)

These Advanced Pharmacy Practice Experiences (APPEs) are elective courses designed to offer the student advanced experience in various specialized pharmacy practice settings. Students are expected to apply knowledge and skills learned during the experience and previously in the curriculum in order to prepare and dispense prescription or non-prescription products; accurately and efficiently communicate with patients, caregivers, and health care professionals; utilize informatics; respond to drug information questions; and conduct themselves in a professional manner.

- 750A. Home Infusion**
- 750C. Managed Care**
- 750D. Sterile Products**
- 750E. Pharmaceutical Industry/Medical Affairs**
- 750F. Drug Information**
- 750G. Medication Safety**
- 750J. Pharmacy Compounding**
- 750K. Nuclear Pharmacy Practice**
- 750M. Specialty Pharmacy Practice**
- 750N. Pharmacy Informatics**
- 750P. Medical Missions**
- 750R. Veterinary Pharmacy Practice**
- 750S. Pharmacy Telemedicine**

770. Pharmacy Research and Academia(4 each)

These Advanced Pharmacy Practice Experiences (APPEs) are elective courses designed to offer the student experience in conducting scientific research or in developing skills as a pharmacy educator. Students interested in completing any of these courses must consult with the course coordinator prior to registration.

- 770A. Drug Design and Synthesis**
- 770B. Pharmacology Research**
- 770C. Pharmaceutics Research**
- 770D. Pharmacy Administration**
- 770E. Pedagogy**