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 of the biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences,
• Providing a Christ-centered environment that focuses on the intellectual, spiritual, and moral development of students in committing themselves to the service and needs of society,
• Developing pharmacy students as practitioners who are people-focused, equipped to provide optimal care, in an interprofessional environment, based on evidence and best-practice standards, and
• Supporting an academic environment that fosters the future-directed growth of students and faculty as it relates to education, practice, research, and scholarship initiatives.

Educational Outcomes

1. Acquire, integrate, and apply knowledge from biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences to explain drug products and action, evaluate scientific literature, solve therapeutic problems, provide patient-centered care, and promote population health (1. Learner)
2. Identify problems (e.g., operational, research, clinical, business), explore and prioritize potential strategies, design and implement viable solutions, and evaluate outcomes (2. Problem Solver)
3. Collect and assess patient information and develop, implement, monitor, evaluate and document a Pharmacists' Patient Care Process (PPCP) in order to provide patient-centered care (3. Caregiver)
4. Identify and utilize human, financial, physical, and technological resources to optimize safety and efficacy of medication use systems (4. Manager)
5. Design and provide strategies in collaboration with other healthcare professionals for the prevention and management of chronic diseases and education of individuals and communities to improve health and wellness (5. Promoter)
6. Utilize population-based information and evidence-based best practices to provide patient-centered care (6. Provider)
7. Identify the learning needs of an individual or audience to determine effective ways to impart information and assess understanding (7. Educator)
8. Represent the interests of patients, patient populations, and the profession of pharmacy (8. Advocate)
9. Participate as an interprofessional healthcare team member to meet patient care needs (9. Collaborator)
10. Assess social and cultural influences on delivery and access to quality care (10. Includer)
11. Communicate in an appropriate manner when interacting with an individual or group (11. Communicator)
12. Examine and reflect on personal attributes that enhance or limit personal and professional growth (12. Self-aware)
13. Influence the development or attainment of shared goals, regardless of position (13. Leader)
14. Participate in activities using creative thinking to envision innovative ways of accomplishing goals (14. Innovator)
15. Exhibit behaviors and values that are consistent with tenets of the pharmacy profession (15. Professional)

Admissions Criteria

Students seeking admission to the College of Pharmacy should visit the College website at www.uu.edu/programs/pharmacy/admissions/.

Financial Information

Tuition is $35,850 per year with a $2,000 general student fee ($1,000/semester) for the Doctor of Pharmacy. Full payment for a term (Fall, Winter, Spring, Summer Semesters or other non-regular terms) is expected at the time of registration for classes. Audit of a course is $440/hr.

Laptop........................................................................................................actual cost*
Cap & Gown Purchase............................................. approximately $80
Annual Background Check.................................approximately $150

All financial information is subject to change without notice.
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 veterans who qualify for Veterans Benefits. Any person who qualifies for VA Benefits should check with the Office of Student Financial Planning as soon as possible after acceptance into a graduate program.

Interprofessional Practice and Education (IPE)
Interprofessional practice and education is incorporated in various courses throughout the curriculum. Pharmacy students are provided multiple opportunities to learn about, from and with other healthcare professionals to gain an understanding of the roles and responsibilities of all healthcare providers and how interprofessional teamwork can improve patient outcomes. IPE enables future pharmacists to become collaborative practice ready providers.

Center for Population Health and Rural Medicine (PHaRM)
The purpose of the Center for Population Health and Rural Medicine (PHaRM) is to advance Union University’s ability to care for the underserved population of West Tennessee while broadening the interprofessional educational experiences of our students and other healthcare providers. Our mission includes affording students opportunities to provide more collaborative and patient-centered care in a structured, real-world setting. The Center achieves its mission through interprofessional learning experiences, community service learning experiences, clinical experiences, research, continuing education programs and simulation education.

Co-curriculum
The purpose of the co-curriculum is to provide students with co-curricular activities and learning experiences to complement and advance learning that occurs within the formal didactic and experiential curriculum of COP. There are five co-curricular educational outcomes, referred to as CEPHS. Each outcome is defined below.

1. C: Career Planning: Set goals in order to be residency or practice-ready upon graduation
2. E: Education: Gain knowledge and skills necessary for life-long learning and the provision of evidence-based patient care
3. P: Personal and Professional Growth: Develop self-awareness to foster personal maturation and professional growth
5. S: Service: Demonstrate selfless concern for meeting the needs of patients, the profession, and the community

Students must complete required activities in the indicated year (e.g., P1, P2, P3 or P4) in order to progress to the next cohort year. Failure to complete required expectations will delay graduation.

Graduation Requirements
- Completion of the coursework for the Doctor of Pharmacy with a minimum cumulative grade point average of 2.33.
- Successful completion of 4-year co-curriculum.
- All didactic, experiential, and co-curricular course requirements must be successfully completed.
- File an application for graduation with the UUCOP Office of Student Services and the Academic Center.
- Pay in full the student’s account balance with the UUCOP Business Office.
- Discharge all other obligations (fines, credentials, fees, etc.) at the University.

Course Requirements of the Doctor of Pharmacy—150 hours

I. Year One Courses: BIO/PHRM 510, 524; PHRM 700, 705, 710, 714, 716, 718, 723, 725, 726, 728, 729, 730, 731, 739, 749, 752, 763.
II. Year Two Courses: BIO/PHRM 519; PHRM 715, 733, 734, 735, 736, 738, 740, 741, 746, 748, 750, 751, 758, 764, 765, 767, 773.
III. Year Three Courses: PHRM 720, 722, 744, 760, 761, 766, 768, 769, 770, 772.
IV. Year Four Spring Courses: PHRM 774 and 775
V. Electives: 8 hours from PHRM Electives or other graduate elective courses as approved by the College of Pharmacy Curriculum Committee. 6 of the 8 hours must be designated as Board-preparatory electives. Students may take up to 4 hours of additional electives as part of their cohort tuition expense.
VI. Co-Curriculum: Students must complete required activities as outlined per cohort year.
VII. Experiential Education: Students must complete 10 advanced pharmacy practice experiences (APPEs). Six required APPEs include APPE 700, 710A, 710B, 720, 730A, and 730. Four additional APPEs are chosen by the student. No more than 2 non-direct care rotations are allowed.

Dual-Degree Option
Union University’s College of Pharmacy and the McAfee School of Business offer a dual degree option. Interested students enrolled in the Doctor of Pharmacy program may dually enroll in the MBA Program. Students will follow the curriculum as outlined below under Graduation Requirements but will also include completing a leveling course and an additional 24 hours of MBA core coursework. The remaining 12 hours of MBA coursework will be from the Pharm.D. program as approved by the College of Pharmacy: PHRM700; PHRM735; PHRM744; PHRM765; PHRM772; PHRM 759.
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. Heath 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 pharmaceutics.

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, enterophepatic 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. 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 contact hours) rotation, students are exposed to the role and responsibilities of the pharmacist in institutional practice and the importance of the pharmacist in patient care.

732. Introduction to Medicinal Chemistry Research (2) (NBPE)
In this introductory experience, students will work with faculty to develop skills in computer-aided design of novel drug structures for specific therapeutic targets and in the laboratory to synthesize various structures for pharmacological testing and evaluation.

733. Pharmaceutics I (3)
An introduction to the scientific principles and regulatory issues of pharmaceutical dosage form and delivery system design, compounding, and use. An emphasis will be placed on solid dosage forms including powders, tablets, and capsules, as well as the biopharmaceutical principles of bioavailability and bioequivalence. This course includes laboratory experiences in compounding pharmaceutical dosage forms.

734. Pharmaceutics II (2)
A continuation of 733 to further the understanding of the scientific principles and regulatory issues of pharmaceutical dosage form and delivery system design, with an emphasis on liquid and semi-solid dosage forms. This course will emphasize oral, topical, transdermal, and parenteral routes of administration. The student will develop competency in compounding, proper aseptic technique, and preparation of sterile products with hands-on training in the laboratory.

735. The Union Pharmacist (2)
This course will serve to introduce students to concepts in moral reasoning that relate to key issues in pharmacy practice. Special considerations will be given to Christian perspectives and the course will emphasize attentiveness to differing moral perspectives through reflection and dialogue. Additionally, this course will focus on leadership and professionalism and their impact on personal and professional growth and patient care.

736. Drug Action II (3)
738. Drug Action III (2)
748. Drug Action IV (3)
758. Drug Action V (2)
An integrated course of the chemical and pharmacological basis of drug action. Drug class, mechanism of action, drug interactions, toxicities, pharmacodynamics, and pharmacokinetics are discussed.

739. Clinical Laboratory Medicine (1)
Basic laboratory tests used to diagnose disease and monitor disease progression and drug therapy. Students will learn to screen and evaluate patients using relevant clinical data.
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 cover the various drug classes.

752. Christian Faith and Pharmacy (2)
This course will give students a basic understanding of the Christian Faith as seen through the Old and New Testaments and its impact on the field of pharmacy.

753. Social and Behavioral Research Design I (2) (NBPE)
754. Social and Behavioral Research Design II (2) (NBPE)
A two-course elective sequence designed to provide students an opportunity to develop, conduct, analyze and defend a research project to students & faculty with basic concepts and techniques in social science research methodology, design and analysis and critical evaluation of quantitative and qualitative studies.

756. Pharmacy Management (2) (BPE)
This elective course covers a broad range of community pharmacy management topics, including scheduling, inventory, employment law, claims adjudication, and personnel issues. Special attention is also given to effective communication and conflict negotiation skills. In-class discussions, outside readings, special projects, and expert guest lecturers give students a well-rounded exposure to the roles and responsibilities of the community pharmacy manager.

757. Special Problems in Pharmacy (2) (NBPE)
The purpose of this elective course is to introduce students to the methods by which pharmacists investigate and propose solutions to pharmacy related problems. With the assistance and approval of the instructor, students will identify a pharmacy related problem(s). Student will have the opportunity to gather information including completing a literature search and present their findings in an oral or written format.

759. Population Health (2) (BPE)
This elective course is designed to introduce pharmacy students to the concepts and issues of population health as they relate to the practice of pharmacy. Students learn how population health concepts and issues are important in daily pharmacy practice, with an emphasis on applying the fundamental issues of population health, health promotion, disease prevention, and epidemiology within pharmacy practice through a case study approach. Population health topics as they relate to the pharmacy discipline are emphasized and include but are not limited to: providing population-based care, providing patient-centered care, promoting the availability of effective health and disease prevention services and health policy, research design, biostatistics, economics/pharmacoeconomics, epidemiology/pharmacoepidemiology, and professional communication.

762. Infectious Disease (2) (BPE)
This elective course is designed strengthen the student’s knowledge of infectious disease topics with emphasis on application of primary research and current guidelines in various disease states. The course will utilize group discussion of primary literature including reviews, guidelines and primary research articles on selected topics in the area of infectious disease therapeutics. Students will also give presentations on other related topics that will extend their knowledge beyond that provided in previous coursework.

763. Top 100 Drugs and Patient Counseling (2)
The purpose of this course is to provide first semester doctor of pharmacy students with an overview of some of the most commonly prescribed drugs in the US during the past year and basic skills required to effectively communicate drug information to patients.
where students can evaluate patients and provide therapeutic group recitations. Simulated patient cases will also be utilized to present patient cases and therapeutic plans during small group interactions and patient review, students will participate in interprofessional patient experiences. Students will have opportunities to have direct patient contact and participate in interprofessional patient care; with these interactions and patient review, students will then present patient cases and therapeutic plans during small group recitations. Simulated patient cases will also be utilized where students can evaluate patients and provide therapeutic recommendations in the simulation lab.

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 I) 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 experience preparing some traditional solid dosage forms like tablets, capsules, powders, lozenges, and suppositories. It will also emphasize the preparation of some liquid dosage forms including solutions and suspensions. Semi-solids such as creams, pastes, ointments and emulsions will also be emphasized and prepared in the lab. Additionally the student will also utilize and apply their pharmaceutical calculation skills, which they began acquiring or developing from the previous year. For example in a compounding pharmacy, the pharmacists must know and frequently perform the necessary mathematical calculations to determine the amount of active pharmaceutical ingredients (API) and excipients needed to prepare and produce a particular dosage form and product strength. Furthermore the pharmacist must also understand and know how to perform the calculations necessary for evaluating and determining drug encapsulation efficiency, product weight uniformity, and drug release rate from the prepared product. Accuracy (and or proficiency) of interpretation of a prescription and subsequent processing of the product label will be covered as well.

765. **Pharmacoeconomics and Health Systems Management (2)**
Concepts and theories of pharmacoeconomics and human resource management in all pharmacy practice settings: planning, implementation, and analysis processes as related to personnel along with fiscal management at the systems, pharmacy and patient level.

766. **Patient Assessment and Interviewing (2)**
Hands-on opportunity for students to apply concepts of physical assessment and interviewing in a clinical laboratory environment. Students will be able to assess response to drug therapy by combining physical assessment with patient interviewing and will also develop their skills in communicating with patients.

767. **Applied Therapeutics with IPE I (2)**
768. **Applied Therapeutics with IPE II (2)**
These P-2 and P-3 courses are two of five designed to focus on the development of professional skills required for contemporary pharmacy practice. Students are placed in the clinical environment to introduce the concepts of pharmaceutical care prior to advanced pharmacy practice experiences. Students will have opportunities to have direct patient contact and participate in interprofessional patient care; with these interactions and patient review, students will then present patient cases and therapeutic plans during small group recitations. Simulated patient cases will also be utilized where students can evaluate patients and provide therapeutic recommendations in the simulation lab.

770. **Pharmacokinetic Principles and Application (4)**
This course introduces pharmacokinetic principles and therapeutic drug monitoring. Students will gain an understanding of the absorption, distribution, metabolism and elimination of drugs, focusing on quantitative aspects of these processes. Pharmacodynamic and clinical implications will be explored, including how to formulate appropriate dosing regimens based on patient specific physiological and environmental factors. Pharmacokinetic variability caused by differences in intrinsic and extrinsic factors will be discussed. Didactic course work will be further emphasized via clinical cases in a laboratory setting.

771. **Critical Review of Drugs (2) (BPE)**
This inter-disciplinary science-based 2-credit hour elective will involve a critical analysis of drugs of interest. This active learning exercise will provide the PharmD candidate with an opportunity to review, integrate and apply basic concepts, principles and their knowledge of Medicinal Chemistry, Pharmacology and Pharmacotherapeutics to perform a thorough analysis of drug related scientific literature and experimental data. Key areas of review will include Brand and Generic drug names, Chemistry (Pharmacophores, SAR and Physicochemical properties), Pathophysiology, Mechanism(s) of action, FDA approved indications, Metabolic Outcomes, Drug Interactions, Adverse effects and Boxed warnings. The course is primarily discussion based with student led presentations on drugs assigned to them.

772. **Literature Evaluation (2)**
PHRM 772 builds on the principles introduced in PHRM 723. During the Course, faculty and students will discuss selected clinical trials, relevant principles of study design, and primary medical literature evaluation. The emphasis will be on training students in the interpretation and critical analysis of biomedical literature for the purpose of developing evidence-based care recommendations for a given patient or patient population.

773. **Pharmaceutics II Lab – Sterile Products (1)**
This lab course is designed for PY2 students to apply some of the basic principles and concepts they learned from Pharmaceutics I and Pharmaceutics II and other clinical pharmacy courses as a Union University College of Pharmacy means of performing pharmaceutical compounding. This course will emphasize all sterile dosage forms including parenteral, otic, inhalational and ocular dosage forms. This course will provide hands-on training as students will work in a sterile environment with a laminar-flow hood. Students will demonstrate aseptic technique and necessary safety precautions when compounding piggyback medications, large volume fluids, parenteral nutrition, and sterile irrigation solutions. Students will prepare various drug products and apply appropriate labels. Students will be introduced to USP Chapter <797> and OSHA standards for safety. Moreover the student will also utilize and apply their pharmaceutical calculation skills, which they began acquiring or developing from the previous year. There will be a comprehensive review of all pharmaceutical and clinical calculations. Students will demonstrate how to perform various calculations necessary on the rate and volume of drug administration.
774. Clinical Foundations (2)
This course is designed to 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 to provide an update and review of key foundational concepts in the pharmaceutical sciences. This includes, but is not limited to, pharmaceutical calculations, pharmacokinetics, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy administration.

776. Internal Medicine Pharmacotherapy (2) (BPE)
This course is designed to 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.

780PF. Study Abroad Programs (Pass/Fail) As Needed
All courses and their applications must be defined and approved prior to travel.

781. Advanced Self-Care (2) (BPE)
This is an elective course designed to help prepare the student for practice in all areas of pharmacy with a focus on retail or ambulatory care settings. The goal of this course is to produce pharmacists who are able to assist patients with safe and effective self-care decisions and communicate recommendations appropriately. It will cover disease prevention and review common conditions that can be treated with non-prescription medications or herbal products with a focus on identifying whether a patient is eligible for self-care, selecting the most appropriate non-prescription treatment (pharmacological and/or non-pharmacological), and providing appropriate counseling.

782. Women’s Health (2) (BPE)
This is an elective course designed to provide the student learning opportunities covering women’s health topics. This course will emphasize practice in the ambulatory care setting; however, the student should be able to translate the knowledge gained into all pharmacy practice areas. The goal of this course is to prepare students to recognize gender differences over the lifespan of a woman in regards to health conditions and medication management. It will cover gender differences in regards to disease risk, prevention, and management and use of medication (complementary and alternative medicine, pregnancy and lactation, contraception, infertility, and menopause).

783. Medical Mission Team Leadership (2) (NBPE)
An introduction to responsibilities of medical mission trip leadership. Each area of the medical mission team will be covered during the course with emphasis placed on pharmacy-specific planning and function. Logistical planning will be discussed and examined during the semester.

785. Special Studies in Pharmacy (1-6)
Group studies which do not appear in the College course offerings. Content will be determined by need.

795. Independent Study in Pharmacy (1-3)
Individual research and study under the guidance of a pharmacy faculty member.
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. Students are expected to apply knowledge and skills learned during the experience and previously in the curriculum in order to accurately and efficiently fill prescription orders; identify and resolve medication-related problems; collect patient specific information for medication therapy management (MTM); appropriately document MTM and related activities; respond to drug information questions; identify and provide health prevention services, including immunizations; communicate effectively, orally and in writing, with patients, caregivers, and other health professionals; manage a pharmacy practice; and conduct themselves in a professional manner. Course are repeatable for credit.

710A. Advanced Chain Community Practice
710B. Advanced Independent Community Practice
710D. Community Practice for Medically Undeserved
710E. Community Institutional Outpatient Pharmacy

720. Ambulatory Care (4 each)

One APPE in this section is required. Additional courses can be completed as elective APPEs. The course is designed to offer the student advanced experience in an ambulatory care pharmacy practice setting. Students are expected to apply knowledge and skills learned during the experience and previously in the curriculum in order to communicate effectively with patients and health care providers; conduct physical assessments as required; identify and resolve medication-related problems; develop evidence-based treatment plans; respond to drug information questions; manage a patient-centered practice; actively participate as an interprofessional healthcare team member; and conduct themselves in a professional manner.

720A. Ambulatory Primary Care
720B. Ambulatory Anticoagulation Management
720C. Ambulatory Pediatric Care
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 document 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

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

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