

## Course Descriptions

### **PHRD 510 – Personal/Professional Development I**

*Credit: 0.0 hours*

This course is designed to provide the student pharmacist with the tools necessary to excel as a professional throughout both the pharmacy curriculum and their professional career. This course is taught longitudinally throughout all three years of the didactic curriculum, and its aim is to impart knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate the key elements of personal and professional development: self-awareness, leadership, innovation and entrepreneurship, and professionalism.

### **PHRD 511 – Biomedical Foundations**

*Credit: 4.0 hours*

This course is designed to give the student pharmacist a strong foundation in biochemical principles and metabolic pathways at the molecular and cellular levels; cellular and tissue physiology and basic anatomical structures; and aspects of medically-related microbiology.

### **PHRD 512 – US Health Care**

*Credit: 1.5 hours*

This course will focus on introducing the student pharmacist to the US Healthcare System and its components, the profession of pharmacy and the expanding collaborative roles of pharmacists in the healthcare system, and contrast the US Healthcare System to systems from different countries.

### **PHRD 513 – Pharmacy Practice Skills I**

*Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student pharmacist for the experiential component of the Doctor of Pharmacy curriculum.

### **PHRD 515 – Pharmaceutics, Pharmacokinetics & Calculations I (PPC I)**

*Credit: 1.5 hours*

This course exposes the student pharmacist to fundamental pharmaceutical calculations encountered in pharmacy practice and serves as a foundation for the future concepts in pharmaceutics and pharmacokinetics.

### **PHRD 516 – Principles of Drug Information**

*Credit: 1.0 hour*

This course is designed to introduce the student pharmacist to sources of drug information and how they are used in pharmacy practice and in the pharmaceutical industry. Student pharmacists will gain practical experience utilizing drug information resources to answer basic and moderately

complex biomedical questions. This experience provides student pharmacists with a foundation for developing skill sets related to drug information, literature evaluation, and communication.

### **PHRD 521 – Pharmaceutical Sciences Foundations**

*Credit: 3.5 hours*

This course is designed to incorporate the principles of pharmaceutics, pharmacokinetics, medicinal chemistry, and pharmacology to provide the student pharmacist with a foundation in the Pharmaceutical Sciences that is critical to the understanding of Pharmacotherapy. This course will emphasize the physicochemical properties of drugs and their effects on drug handling and biological activity.

### **PHRD 522 – Nonprescription Therapeutics**

*Credit: 3.0 hours*

This course is a study of various nonprescription (OTC) products commonly found in community pharmacy practice. Emphasis is placed on the problem-solving process involved in patient assessment, triaging of serious healthcare problems and referral to other healthcare settings as appropriate, therapeutic intervention, product recommendation(s), and patient education regarding health promotion and disease management with nonprescription medications. Student pharmacists will have to tailor product selection to special populations, including children, geriatrics, patients with certain medical conditions, etc. when appropriate. Student pharmacists will also learn and apply skills in patient interviewing techniques and medication counseling through the use of mock patients and simulated patients.

### **PHRD 523 – Pharmacy Practice Skills II**

*Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student pharmacist for the experiential component of the Doctor of Pharmacy curriculum.

### **PHRD 525 – Pharmaceutics, Pharmacokinetics & Calculations II (PPC II)**

*Credit: 2.0 hours*

This course covers the basics of pharmacokinetic and biopharmaceutic concepts to enable student pharmacists monitor drug concentrations effectively.

### **PHRD 526 – Introduction to Evidence-Based Medicine**

*Credit: 1.0 hour*

This course is designed to further develop proficiency in literature evaluation and the application of biomedical knowledge to individual patients. This experience will provide

a foundation for the utilization of literature to support evidence-based decision making and refine student pharmacists' ability to communicate complex biomedical information.

### **PHRD 530 – Personal/Professional Development II**

*Credit: 0.0 hours*

This course is designed to provide the student pharmacist with the tools necessary to excel as a professional throughout both the pharmacy curriculum and their professional career. This course is taught longitudinally throughout all three years of the didactic curriculum, and its aim is to impart knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate the key elements of personal and professional development: self-awareness, leadership, innovation and entrepreneurship, and professionalism.

### **PHRD 531 – Integrated Pharmacotherapy I Infection & Immunity**

*Credit 5.5 hours*

This course is designed to integrate biomedical sciences, pharmaceutical sciences, and clinical therapeutics with an emphasis on pharmacotherapeutic management of infectious diseases and the immune system. The student pharmacist will learn about the structure and function of the human body as well as medications and their effects on the body. The student pharmacist will apply this knowledge to develop appropriate, evidence-based pharmacologic and non-pharmacologic therapeutic plans that include monitoring parameters for both acute and chronic disease processes.

### **PHRD 532 – Medical Literature Evaluation I**

*Credit: 1.0 hour*

This course is designed to teach the basic background skills necessary to evaluate and effectively communicate medical literature.

### **PHRD 533 – Pharmacy Practice Skills III**

*Credit 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student pharmacist for the experiential component of the Doctor of Pharmacy curriculum.

### **PHRD 535 – Pharmaceutics, Pharmacokinetics & Calculations III (PPC III)**

*Credit: 2.0 hours*

This course is designed to provide the student pharmacist with a basic understanding of medicinal products' physical and chemical properties and how these properties influence the design of dosage forms. It will enable the student pharmacist to become proficient in general compounding techniques and provides a basic knowledge of

dosage formulation. A weekly laboratory is designed to enhance the technical capability of student pharmacists in this area of practice.

**PHRD 541 – Integrated Pharmacotherapy II: Endocrine**

*Credit: 5.0 hours*

This course is designed to integrate biomedical sciences, pharmaceutical sciences, and clinical therapeutics with an emphasis on pharmacotherapeutic management of the reproductive, genitourinary and endocrine systems. The student pharmacist will learn about the structure and function of the human body as well as medications and their effects on the body. The student pharmacist will apply this knowledge to develop appropriate, evidence-based pharmacologic and nonpharmacologic therapeutic plans that include monitoring relevant parameters for both acute and chronic disease processes.

**PHRD 542 – Medical Literature Evaluation II**

*Credit: 1.0 hour*

This course is designed to reinforce basic skills and teach intermediate level skills necessary to evaluate and effectively communicate medical literature. Through journal club active learning sessions, emphasis will be placed upon learning how to evaluate medical literature and apply this literature to patient care.

**PHRD 543 – Pharmacy Practice Skills IV**

*Credit: 1.0 hour*

This course is intended to provide students-pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student pharmacist for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 545 – Pharmaceutics, Pharmacokinetics & Calculations IV (PPC IV)**

*Credit: 3.0 hours*

This course is a continuation of PHRD 535, and is designed to provide the student with a basic understanding of medicinal products' physical and chemical properties of and how these properties influence the design of dosage forms. It will enable the student pharmacist to become proficient in general compounding techniques and a basic knowledge of dosage formulation. A weekly laboratory is designed to enhance the technical capability of student pharmacists in this area of practice.

**PHRD 610 – Personal and Professional Development III**

*Credit: 0.0 hours*

This course is designed to provide the student pharmacist with the tools necessary to excel as a professional throughout both the pharmacy curriculum and their professional

career. This co-curricular course is taught longitudinally throughout all three years of the didactic curriculum and its aim is to impart knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate the key elements of personal and professional development: self-awareness, leadership, innovation and entrepreneurship, and professionalism.

**PHRD 611 – Integrated Pharmacotherapy III: Cardiovascular-Renal Integrated Pharmacotherapy (IP) Module I**

*Credit: 5.5 hours*

This course is designed to incorporate the dynamic nature of the profession through an integration of basic science, pharmacology, and clinical therapeutics with a focus on the management of cardiovascular and renal diseases states. Emphasis will be placed on layered learning with cumulative content continuously incorporated to most closely mimic the intricacies of clinical practice. In learning about structure and function of the human body as well as drugs and their effects, the student will be able to determine optimal therapy with monitoring parameters for both acute and chronic disease processes.

**PHRD 612 – Health Outcomes and Informatics I**

*Credit: 1.5 hours*

This course is designed to provide students pharmacists with a basic understanding of pharmacoepidemiology, which is the study of the use and effects of medications in large patient populations. Students will build a foundational knowledge of the process of pharmacoepidemiological research (such as methodology and statistical analysis) and its application to the measurement of treatment outcomes in large populations.

**PHRD 613 – Pharmacy Practice Skills V**

*Credit 1.0 hour*

This course is intended to provide students-pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 65X – Elective**

*Credit: 1.0 hour*

**PHRD 621 – Integrated Pharmacotherapy IV: Cardiovascular-Renal Integrated Pharmacotherapy II**

*Credit: 5.0 hours*

This course is designed to incorporate the dynamic nature of the profession through an integration of basic science, pharmacology, and clinical therapeutics with a focus on the management of cardiovascular and renal diseases states. Emphasis will be placed on

layered learning with cumulative content continuously incorporated to most closely mimic the intricacies of clinical practice. In learning about structure and function of the human body as well as drugs and their effects, the student will be able to determine optimal therapy with monitoring parameters for both acute and chronic disease processes.

**PHRD 622 – Health Outcomes and Informatics II**

*Credit: 1.5 hours*

This course is designed to provide the student pharmacist with foundational knowledge and application in health informatics. In learning about health informatics, the student pharmacist will be able to effectively communicate key principles that can be used to facilitate improvements in health-care technology design and deployment to improve usability and mitigate potential risks of patient harm.

**PHRD 623 – Pharmacy Practice Skills VI**

*Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 630 – Personal/Professional Development IV**

*Credit: 0.0 hours*

This course is designed to provide the student pharmacist with the tools necessary to excel as a professional throughout both the pharmacy curriculum and their professional career. This co-curricular course is taught longitudinally throughout all three years of the didactic curriculum and its aim is to impart knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate the key elements of personal and professional development: self-awareness, leadership, innovation and entrepreneurship, and professionalism.

**PHRD 631 – Integrated Pharmacotherapy V: Gastrointestinal**

*Credit: 4.5 hours*

This course is designed to integrate anatomy & physiology, pathophysiology, pharmacology and medicinal chemistry with an emphasis on clinical application for the gastrointestinal system. In learning about structure and function of the human body as well as medications and their effects on the body, the student will be able to determine optimal pharmacologic and non-pharmacologic therapy including monitoring parameters for both acute and chronic disease processes.

**PHRD 632 – Pharmacogenomics I***Credit: 1.0 hour*

This course will provide the student pharmacist with an understanding of the basic principles of genetics and pharmacogenomics as they relate to the variability in drug response. Additionally, it will provide an understanding of the basic principles of the molecular techniques and genetic tests that are currently utilized in clinical practice.

**PHRD 633 – Pharmacy Practice Skills VII***Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD: 635 – Law & Ethics I***Credit 2.0 hours*

Discussions and analysis of federal law, regulations, and standards of practice and ethics related to pharmacy practice and drug development and distribution. Focus is upon analyzing, understanding and applying these issues through case studies and hypotheticals. Considerable emphasis on professionalism and the historical events that have shaped today's professional pharmacy practice, as well as the drug development and distribution system. Students will be introduced to ethical principles. Cases involving ethical and legal situations as well as article reviews of ethics topics will be incorporated into the course for student groups to identify issues and the consequences of decisions.

**PHRD 641 – Integrated Pharmacotherapy VI: Neurology/Psychiatry***Credit: 5.0 hours*

This course is designed to provide the student pharmacist with a foundation in the biomedical sciences, pharmaceutical sciences, and pharmacotherapeutic management of neurological and psychiatric conditions. In learning about structure and function of the nervous system as well as drugs and their effects, the student pharmacist will be able to design therapeutic treatment plans with a patient-centered focus and appropriate monitoring. Students will be expected to provide rationale, critique, and communicate and defend their therapeutic plans to their peers.

**PHRD 642 – Pharmacogenomics II***Credit: 1.0 hour*

This course will build upon the knowledge obtained during Pharmacogenomics I. Student pharmacists will practice the application of this knowledge in case-based scenarios involving the different pharmacy practice settings.

**PHRD 643 – Pharmacy Practice Skills VIII***Credit 1.5 hours*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 645 – Pharmacy Jurisprudence and Ethics II***Credit: 2.0 hours*

Discussions and analysis of North Carolina laws, regulations, and standards of practice and ethics related to pharmacy practice and drug development and distribution. Focus is upon analyzing, understanding and applying these issues through case studies and hypotheticals. Considerable emphasis on professionalism and the historical events that have shaped today's professional pharmacy practice, as well as the drug development and distribution system. Students will be introduced to ethical principles. Cases involving ethical and legal situations as well as article reviews of ethics topics will be incorporated into the course for student groups to identify issues and the consequences of decisions.

**PHRD 705/PHRD 707 – Community/Hospital IPPE***Credit: 1.0 hour*

These two, month-long practice experiences are designed to expose the student pharmacist to the practice of pharmaceutical care in the community and hospital settings. These practice experiences introduce the student pharmacist to the operational, clinical and administrative roles of the pharmacist; however, there is a greater emphasis on the drug distribution functions of the pharmacist in these settings. These experiences are usually scheduled during the summers following the first and second professional years.

**PHRD 710 – Personal/Professional Development V***Credit: 0.0 hour*

This course is designed to provide the student pharmacist with the tools necessary to excel as a professional throughout both the pharmacy curriculum and their professional career. This co-curricular course is taught longitudinally throughout all three years of the didactic curriculum and its aim is to impart knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate the key elements of personal and professional development: self-awareness, leadership, innovation and entrepreneurship, and professionalism.

**PHRD 711 – Integrated Pharmacotherapy (IP) VII: Musculoskeletal***Credit: 5.0 hours*

This course focuses on the pharmacotherapy of problems associated with the musculoskeletal system.

**PHRD 712 – Research Topics in Pharmacy I***Credit: 1.0 hour*

This course series is designed to equip student pharmacists with the skills necessary to research a pharmacy topic and present their findings and interpretation of the literature in a formal setting. The student pharmacist will learn about writing effective learning objectives, interpreting results from the literature, organizing a presentation and defending their critique in a formal presentation. The material learned in this course series will further develop the research knowledge of pharmacy topics for the student pharmacist.

**PHRD 713 – Pharmacy Practice Skills IX***Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 715 – Pharmacy Operation 1 (Human Resource Management)***Credit: 2.0 hours*

This course will present principles of management and marketing as applied to pharmacy practice.

**PHRD 721 – Integrated Pharmacotherapy (IP) VIII: Pulmonary, Otic and Ophthalmic***Credit: 5.0 hours*

This course is designed to integrate anatomy and physiology, pathophysiology, pharmacology and medicinal chemistry with an emphasis on clinical application for the pulmonary, otic and ophthalmic body systems. In learning about structure and function of the human body, as well as medications and their effects on the body, the student pharmacist will be able to determine optimal pharmacologic and non-pharmacologic therapy including monitoring parameters for both acute and chronic disease processes.

**PHRD 722 – Research Topics in Pharmacy II***Credit: 1.0 hour*

This course series is designed to equip student pharmacists with the skills necessary to research a pharmacy topic and present their findings and interpretation of the literature in a formal setting. The student pharmacist will learn about writing effective learning objectives, interpreting results from the literature, organizing a presentation and defending their critique in a formal presentation.



The material learned in this course series will further develop the research knowledge of pharmacy topics for the student pharmacist.

**PHRD 723 – Pharmacy Practice Skills X**

*Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 725 – Pharmacy Operations II (Financial Management)**

*Credit: 2.0 hours*

The principles of financial management are applicable and necessary for pharmacists, as both professionals and persons. This course covers the basics of financial accounting, managerial accounting, personal finance, professional finance, basic economics, and basic pharmacoeconomics. The course is conducted with a focus on decision-making scenarios in various pharmacy practice settings.

**PHRD 730 – Personal/Professional Development VI**

*Credit: 0.0 hour*

This course is designed to provide the student pharmacist with the tools necessary to excel as a professional throughout both the pharmacy curriculum and their professional career. This co-curricular course is taught longitudinally throughout all three years of the didactic curriculum and its aim is to impart knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate the key elements of personal and professional development: self-awareness, leadership, innovation and entrepreneurship, and professionalism.

**PHRD 731 – Integrated Pharmacotherapy (IP) Dermatology, Nutrition, Obesity, and Weight Management (IP-IX: Derm, Nutrition)**

*Credit: 2.0 hours*

This course is designed to help the student pharmacist integrate principles of the basic sciences with the clinical application of drug and non-drug solutions for the management of conditions of the skin. In addition, this course is designed to provide a firm foundation of clinical and scientific knowledge for the treatment of nutritional issues (excess or depletion) that will be faced in the clinical setting.

**PHRD 732 – Applied Drug Management I**

*Credit: 1.5 hours*

This course is designed to provide the problem-solving skills necessary to apply pharmacokinetic principles in the clinical setting while reviewing targeted do-

main-knowledge. Emphasis is placed upon the application of therapeutic drug monitoring, drug dosing, and the individualization of drug therapy.

**PHRD 733 – Pharmacy Practice Skills XI: Sterile Products**

*Credit: 2.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 736 – Integrated Pharmacotherapy X: Hematology Oncology**

*Credit: 5.0 hours*

This course is designed to illustrate the appropriate clinical application of biochemistry, pharmacology, immunology, pharmacodynamics, pathophysiology and pharmacokinetics to a wide variety of acute and chronic hematology and oncology disease states. Emphasis will be placed on data collection and decision making required for optimal drug therapy.

**PHRD 741 – Integrated Pharmacotherapy (IP) XI: Special Populations**

*Credit: 4.5 hours*

This course is designed to integrate anatomy and physiology, pathophysiology, pharmacology and medicinal chemistry with an emphasis on clinical application for special populations with an emphasis on geriatrics, pediatrics, pregnant women and end of life patients. In learning about structure and function of the human body as well as medications and their effects on the body, the student pharmacist will be able to determine optimal pharmacologic and non-pharmacologic therapy including monitoring parameters for both acute and chronic disease processes in the special populations groups.

**PHRD 742 – Applied Drug Management II**

*Credit 1.5 hours*

This course is designed to provide the problem-solving skills necessary to apply pharmacokinetic principles in the clinical setting while reviewing targeted domain-knowledge. Emphasis is placed upon the application of therapeutic drug monitoring, drug dosing, and the individualization of drug therapy.

**PHRD 743 – Pharmacy Practice Skills XII**

*Credit: 1.0 hour*

This course is intended to provide student pharmacists the opportunity to learn skills provided by pharmacists in clinical practice in order to help prepare the student for the experiential component of the Doctor of Pharmacy curriculum.

**PHRD 745 – Integrated Pharmacotherapy (IP) XII: Clinical Updates**

*Credit: 1.0 hour*

Following completion of the Integrated Pharmacotherapy Courses I-XI, this course is designed to allow the student pharmacist to determine and apply the most up-to-date treatment guidelines and utilize the most current evidence to develop and prioritize the optimal therapeutic plan for the patient.

**PHRD 8XX – Advanced Pharmacy Practice Experiences**

*Credit: 4.0 hours per rotation*

These rotations are designed to provide the students with an environment where they can integrate the academic knowledge gained during pre-clinical years with professional experience to develop clinical expertise in the promotion of rationale and efficacious drug therapy. Each individually numbered rotation of a calendar month (160 hours) duration is weighted as four semester hours. The selection, sequence and scheduling of these senior rotations will vary according to an individual student's needs, interests and site availability. Campbell University has affiliation agreements for a diverse offering of electives ranging from additional experiences in general community and hospital practices to sub-specialties in hospital (administration, intensive care, cardiology, and emergency medicine), to clinics and long-term care (ambulatory care, skilled and assisted living communities) to community practice (compounding, medication therapy management services, and community management).

**PHRD 804 – Advanced Community: Advanced Pharmacy Practice Experience**

*Credit: 4.0 hours*

The purpose of this experience is to provide future pharmacists with an understanding of how the practice of pharmacy is conducted in the community setting and to further develop their professional attitudes, judgment, and skills needed to function in this practice setting. The setting for this type of APPE is select community pharmacy environments (chain and independent) in which pharmaceutical care services are provided in addition to traditional dispensing and counseling services.

**PHRD 805 – Ambulatory Care: Advanced Pharmacy Practice Experience**

*Credit: 4.0 hours*

The purpose of this experience is to introduce the student to clinical pharmacy practice in a patient-care setting through the management of common disease states. The setting for this type of APPE provides

the opportunity for patient-care activities in medical practice sites such as physician offices and community health centers.

**PHRD 806 – Geriatrics: Advanced Pharmacy Practice Experience**

*Credit: 4.0 hours*

The purpose of this experience is to introduce the student to the philosophies and practice of geriatric medicine through clinically-oriented activities. The setting for this type of APPE provides the opportunity for patient-care with geriatric patients in assisted living, skilled nursing facility or other practice settings that have a large percentage of patients age 65 or older or patients physiologically similar to geriatric individuals.

**PHRD 807 – Internal Medicine I: Advanced Pharmacy Practice Experience**

*Credit: 4.0 hours*

The purpose of this experience is to expose the student to clinical pharmacy practice in the inpatient setting through clinically-oriented services and patient-specific activities. The setting for this type of APPE allows the student to work with an interprofessional team in the hospital setting handling patient care from an acute care perspective.

**PHRD 808 – Internal Medicine II: Advanced Pharmacy Practice Experience**

*Credit: 4.0 hours*

The purpose of this experience is to build on the exposure students obtain during PHRD 807 for pharmacy practice in the inpatient setting through clinically-oriented services and patient-specific activities. The setting for this type of APPE allows the student to work with an interprofessional team in the hospital setting handling patient care from an acute care perspective.

**PHRD 810 – Advanced Hospital: Advanced Pharmacy Practice Experience**

*Credit: 4.0 hours*

The purpose of this experience is to expand upon the knowledge and skill-set obtained during the Introductory to Hospital Pharmacy Practice Experience (PHRD707) and to facilitate the student pharmacist's exposure to current hospital pharmacy practice. The setting for this type of APPE allows the student pharmacist to enhance operational/distributive skills as a component of integrated, interprofessional patient care within the wider hospital/health system setting.

## Electives

**PHRD 651 – Special Research Pharm. Science**

*Credit: 1.0-3.0 hours*

The purpose of this elective course is to introduce the student pharmacist to methods of basic science and/or clinical research.

**PHRD 652 – Special Research Projects in Pharmacy Practice**

*Credit: 1.0-3.0 hours*

Independent research projects performed under the direction of individual faculty mentor from the Department of Pharmacy Practice. This course will enable the student pharmacist to apply the scientific inquiry process and to utilize critical thinking, problem-solving, verbal, as well as written communication skills while conducting a practice-based research project. Alternatively, this course may be used for other research-related scholarly pursuits such as the production of a manuscript following primary literature investigation and review of a specific area of scientific inquiry that is timely, rigorous and contributes to the medical, pharmacy practice and/or pharmacy social & administrative scientific literature. The student pharmacist will gain experience in: Literature search/evaluation; Protocol design and IRB requirements; Data acquisition and management; Data analysis; Project management and report requirements; and/or Scientific writing.

**PHRD 653 – Practical Compounding**

*Credit: 1.0 hour*

This elective course will expose and demonstrate various aspects of the art and science of compounding. Students will apply and practice their calculation/prescription-preparation skills to formulations used by current practitioners. This course requires an additional fee.

**PHRD 654 – Sterile Practical Compounding**

*Credit: 1.0 hour*

This course offers instruction on additional compounding and processing techniques and exercises that include practical applications and thought processes for preparing a sterile dosage form. This course requires an additional fee.

**PHRD 656 – Student Leadership**

*Credit: 1.0-2.0 hours*

The purpose of this course is to identify and strengthen leadership skills. It uses a development approach focusing on how individuals become effective leaders by addressing the human element of enterprise within significant business situations. Students will strengthen their individual capabilities to advance their organizations strategically by rethinking their approaches to management, leadership, and leadership development. This course enables students to understand how to build and foster relationships as well as emphasizes the importance of those relationships in their professional and personal lives.

**PHRD 657 – Spanish for Pharmacists**

*Credit: 1.0 hour*

This course introduces students to basic and practical information that they can use when providing pharmacy services to Spanish speaking patients. The course covers common situations, such as greeting, patient data collection, prescription dispensing information and administration instructions. Students are not required to be fluent in Spanish.

**PHRD 658 – APHA Diabetes Certificate**

*Credit: 1.0 hour*

This course includes a 15 hour on-line self-study (maximum time allotted) and 8 hour live training which will be offered over the last 5 weeks of the semester. The self-study modules are a review of the medical management (pharmacologic and non-pharmacologic) for diabetes and include case studies and activities that must be completed prior to attending the live training. The live training portion is designed to be application of the self-study modules. Participants will be assessed on ability to take blood pressure measurements, perform monofilament foot exams, provide insulin injection, and perform a fingerstick blood glucose using a blood glucose monitor. Case-based learning is also utilized throughout the live portion to apply knowledge of guidelines and therapeutic management (pharmacologic and non-pharmacologic). Participants must also complete an on-line final exam in order to receive a certificate of completion. Students wishing to pursue opportunities in the community or ambulatory care setting would be well-positioned with a certificate in diabetes on the CV; however, issues addressed in this program are not as intense as the information provided in the Diabetes Elective offered through Campbell. This course requires an additional fee.

**PHRD 659 – Geriatric Pharmacotherapy I**

*Credit: 1.0 hour*

This course is designed to allow the student to gain familiarity with select instruments used to assess a variety of conditions which commonly occur in the geriatric population. The course will utilize a combination of didactic lectures, case problems, and actual field use of the techniques and instruments reviewed in class. Most class meetings will have an application component to enable the student to further develop the multi-dimensional knowledge and skill-set necessary to comprehensively evaluate and monitor treatment in the older adult.

**PHRD 660 – Medication Errors: Causes, Prevention, Current Issues***Credit: 1.0 hour*

This course is intended to provide the student with an introduction to the problem of medication errors in health care. Activities will include discussions of significant medication error research, factors which can contribute to errors, drug categories and abbreviations associated with error risks, error detecting methods, case analysis of errors, and error prevention methods, including the roles of both the patient and technology. Students will also use the Internet to become familiar with various organizations and list services related to patient safety and to identify and discuss pertinent issues and current events related to this area.

**PHRD 661 – My Healthy Life***Credit: 1.0 hour*

This course is an in-depth personal journey towards improved health to aid in teaching patients about lifestyle medicine. Each student pharmacist will assess their personal health status through biometric screening and create weekly personal goals for nutrition, physical activity, and other lifestyle factors that meet current evidence-based guidelines. An emphasis will be placed on motivational interviewing for behavior change, goal setting, and identifying and overcoming barriers to living a healthy lifestyle.

**PHRD 662 – Advanced Patient Counseling***Credit: 1.0 hour*

This course will provide the students with additional knowledge and skills to be effective patient educators, which will improve the quality of therapeutic interventions provided to patients. A secondary goal for this course will be to increase student interest in the Annual APhA-ASP National Patient Counseling Competition and to enhance Campbell University's performance at the national competition.

**PHRD 663 – Geriatric Pharmacotherapy II***Credit: 1.0 hour*

This course is designed to allow the student to gain familiarity with select instruments used to assess a variety of conditions which commonly occur in the geriatric population. The course will utilize a combination of didactic lectures, case problems, and actual field use of the techniques and instruments reviewed in class. Most class meetings will have an application component to enable the student to further develop the multi-dimensional knowledge and skill-set necessary to comprehensively evaluate and monitor treatment in the older adult.

**PHRD 664 – Drugs of Abuse***Credit: 2.0 hours*

This course will focus on the chemistry, pharmacology, and toxicology of drug abuse and addiction. The student pharmacist will learn about currently abused substances and their impact on health and society in general. The student pharmacist will utilize this knowledge in the general education of their patients and other health care providers.

**PHRD 665 – Botanical Medicine Seminar***Credit: 1.0 hour*

Surveying botanical medicine literature with emphasis on applications in pharmacy. This course cross list with PHSC 582.

**PHRD 667 – Pharmacy Christian Missions***Credit: 1.0 hour*

This course explores the various issues related to pharmacy/medical missions including how the provision of medical and patient-centered care can serve as opportunities for the presentation of the Christian Gospel. The activities concerning the planning, preparation, and execution of short term mission trips will be discussed.

**PHRD 668 – Introduction to Veterinary Pharmacy***Credit: 1.0 hour*

This course is designed to introduce students to the major differences between veterinary and human diseases, therapeutics, and pharmacy practice. Students participating in this class will be better prepared for veterinary prescription processing, customer questions, and OTC recommendation and precautions in the retail setting.

**PHRD 669 – Community Pharmacy Management***Credit: 1.0 hour*

This course provides an overview of clinical, financial, and managerial considerations for those interested in practicing in community pharmacy. Topics vary annually based on current trends within community pharmacy.

**PHRD 670 – Care of a Patient with Diabetes***Credit: 1.0 hour*

This is an in-depth comprehensive study of the pharmacologic and non-pharmacologic management of diabetes with a primary focus in the outpatient setting. This course focuses on the application of evidence-based care plans to patient cases and an emphasis is placed on the patient-specific approach to problem solving, therapeutic intervention, and patient education.

**PHRD 671 – Herbal & Alternative Medicine***Credit: 1.0 hour*

This course discusses herbal remedies recently being used as alternative solutions to treat and prevent different diseases.

**PHRD 672 – Medication Therapy Management (MTM)***Credit: 1.0 hour*

This course is designed to provide the student pharmacist with an in-depth knowledge of medication therapy management (MTM) services. Participants in this course will develop a working knowledge of current MTM opportunities for pharmacists and learn the process by which to provide MTM services. This course is ideal for student pharmacists interested in expanded services in community pharmacy practice. However the knowledge and skills gained from this course can be applied to any patient care setting.

**PHRD 674 – Multicultural Health Practices/Health Disparities***Credit: 1.0 hour*

This course will provide the student with a further understanding of racial and ethnic disparities in the quality of care received by minority Americans. Topics that will be covered include cultural competence, health literacy and health disparities.

**PHRD 675 – Geriatric Pharmacotherapy III***Credit: 1.0 hour*

This course is designed to introduce student pharmacists to the concepts of geriatric care and build upon knowledge from pharmacotherapy lectures with a focus on older adult patients. The course will review physiologic changes and altered presentation of the elderly patient, geriatric syndromes and pharmacotherapy in the older adult. The course will utilize didactic lectures, case-based discussion and will conclude with an application-based exercise utilizing actual patients. Topics covered include psychiatric and neurologic disease in older adults, musculoskeletal disease and pain management in older adults, end of life care and decision making, geriatric assessment tools (cognitive, mood, falls, adherence, etc.) and participation as a member of the healthcare team.

**PHRD 676 – Anticoagulation I***Credit: 1.0 hour*

This elective course offers a more detailed (depth and breadth) analysis of venous embolic disease (deep-vein thrombosis and pulmonary embolism) focusing upon the scope of the problem within the health care system—appropriate identification of patients at risk, and appropriate efforts to prevent and treat these diseases when necessary. Additionally, there will be a focus upon nationally recognized efforts (The Joint Commission National Patient Safety Goals, The Joint Commission Core Measures for Venous Thromboembolic Disease) to provide efficacy and safety to patients we serve. This course should ready student pharmacists and future pharmacists to



position themselves appropriately into the therapeutic management of anticoagulants and antithrombotics in both the hospital and community pharmacy settings.

#### **PHRD 677 – Making Medicines: Process of Drug Development**

*Credit: 1.5 hours*

In this course, the student pharmacist will explore how a new drug is developed from the initial concept, discovery, pre-clinical and clinical development, regulatory considerations, to the availability to the patient. The goal of the course is to provide an opportunity for student pharmacists to learn the processes required to discover and develop drugs, which will ultimately provide a benefit to meet unmet medical needs, with minimal risk.

#### **PHRD 678 – Specialty Pharmacy Elective**

*Credit: 1.0 hour*

Specialty medications are a rapidly growing segment of the pharmaceutical industry, and will be close to 50% of total pharmacy revenues by 2020. There is a lack of knowledge and awareness to this space within the industry. This course would allow students to engage within this topic earlier, and thus could make didactic and experiential choices to evaluate as a potential professional career option. This may impact other courses where disease states, which include specialty medications, are discussed e.g., oncology, infectious diseases. The information within this Specialty Pharmacy course would build upon the foundational clinical knowledge within therapeutic coursework, but also include focus upon critical factors within Specialty Pharmacy e.g., payer, previous treatment choices, limited drug distribution. Time would need to be dedicated to connecting with other courses to ensure consistency of approach around disease states and medications, and avoid unnecessary repetition.

#### **PHRD 679 – Introduction to Internal Medicine**

*Credit: 1.0 hour*

This elective is designed for student pharmacists with an interest in expanding their ability to apply the principles of pharmacotherapy in a simulated pharmacy workflow environment similar to the Internal Medicine APPE rotation. The purpose of the course is to prepare student pharmacists for the challenges encountered in inpatient pharmacy practice and equip them to identify, critically analyze, and resolve medication issues. Advanced concepts related to pharmacotherapy, critical thinking, and patient evaluation will be emphasized.

#### **PHRD 680 – Applied Pharmacokinetics**

*Credit: 1.0 hour*

Phoenix WinNonLin and NONMEM are two Pharmacokinetic-Pharmacodynamic (PKPD) computer programs/software approved by the US-FDA and used in the industrial and clinical settings for pharmacokinetic analysis and PKPD modeling. This course trains students in hands-on use of Phoenix WinNonLin software and provides necessary familiarity and competencies that prepare students for industrial and clinical pharmacokinetics. Material is presented in both lectures and supervised hands-on sessions, during which students will do interactive programming.

#### **PHRD 681 – Obstetrics, Gynecology, and Women's Health (OB-GYN and WH)**

*Credit: 1.0 hours*

The student-facilitated obstetrics, gynecology, and women's health advanced elective course will help prepare student pharmacists enrolled in the Campbell University College of Pharmacy & Health Sciences to practice evidence-based care involving a variety of advanced women's health issues including, but not limited to, preconception care, contraception, drugs in pregnancy and lactation, menopause pharmacotherapy, osteoporosis, PCOS and infertility.

#### **PHRD 682 – Cardiology**

*Credit: 1.0 hour*

This elective is designed for students with an interest in cardiology. The purpose of the course is to enhance students understanding of cardiovascular pathophysiology and pharmacotherapy. Advanced concepts related to cardiovascular pharmacotherapy will be emphasized.

#### **PHRD 683 – Lipid Management Elective 1**

*Credit: 1.0 hour*

This course is designed to integrate pharmaceutical sciences and clinical therapeutics with an emphasis on the medication management of dyslipidemia. The students will learn about the pathophysiology of lipid disorders, the pharmacology of medications used to treat dyslipidemia and the adverse effects of these medications. The students will learn how to diagnosis lipid disorders, determine treatment goals and will apply this knowledge to develop appropriate, evidence-based pharmacologic and non-pharmacologic therapeutic plans that include monitoring parameters for patients on medications for dyslipidemia.

#### **PHRD 684 – FDA and EU Regulatory Approval Pathways for Biosimilar and Generic drugs**

*Credit: 1.0 hour*

This elective course provides a basic understanding of the FDA and other major inter-

national regulatory approval pathways for the biosimilar (large molecules) and generic (small molecules) drug products.

#### **PHRD 685 – Principles and Applications in Infectious Diseases**

*Credit: 2.0 hours*

This course is designed to enhance student pharmacists' ability to appropriately apply pharmacology, pharmacodynamics, pathophysiology and pharmacokinetics of various infectious diseases topics. Advanced concepts related to antimicrobial therapy will be emphasized.

#### **PHRD 686 – Lipid Management Elective II**

*Credit: 1.0 hour*

This course is designed to integrate pharmaceutical sciences and clinical therapeutics with an emphasis on the medication management of dyslipidemia. The students will learn about the pathophysiology of lipid disorders, the pharmacology of medications used to treat dyslipidemia and the adverse effects of these medications. The students will learn how to diagnosis lipid disorders, determine treatment goals and will apply this knowledge to develop appropriate, evidence-based pharmacologic and non-pharmacologic therapeutic plans that include monitoring parameters for patients in medications for dyslipidemia.

#### **PHRD 687 – Practical Applications in Pediatric Pharmacotherapy**

*Credit: 1.0 hour*

This course is designed to allow student pharmacists with an interest in pediatrics to further develop skills necessary to make rational choices with regard to pediatric pharmacotherapy. These skills will be developed through didactic teaching as well as pediatric case discussions. Student pharmacists will be presented with case based problems and assigned readings for topics at least one week prior to discussion. Advanced concepts of pediatrics will be emphasized.

#### **PHRD 688 – Issues in Critical Care**

*Credit: 2.0 hours*

This course is designed to introduce critical care principles. This course will illustrate the appropriate clinical application of pathophysiology, pharmacokinetics and pharmacodynamics in the critical care population.

#### **PHRD 689 – Neurology**

*Credit: 1.0 hour*

This course will provide the student with a further understanding of neurological disease states and how to manage them, including neurological pathophysiology and an understanding of neurological exam. Topics that will be covered include neurotransmitters and the drugs that affect them, neuromuscular disorders, neuro oncology,

infections of the brain and nervous system, neuropsychiatry, drug abuse and addiction, sleep disorders, genetic neurological disorders, and pediatric and obstetric neurology. Disease state specific medication therapies will be discussed with a focus on guidelines and evidence based medicine.

#### **PHRD 690—Anticoagulation II**

*Credit: 1.0 hour*

This course is designed to enhance those experiences gleaned in all previous course work regarding the epidemiology, pathophysiology and clinical features of patients with Acute Coronary Syndrome (ACS)/Ischemic Heart Disease/Atrial Fibrillation (AFib) by application of state-of-the art therapeutic techniques for patients with ACS/AFib and outcomes associated for treatment of the same.

#### **PHRD 691-Applied Statistical Research**

*Credit: 2.0 hours*

This course offers the student pharmacist the opportunity to learn how to use JMP® Statistical Discovery Software (SAS Institute, Cary, NC) in managing, analyzing, and reporting clinical research pharmacy data. It serves to prepare the student pharmacist for designing their research in clinical study.

#### **IPE 515—New Product Development**

*Credit: 2.0 hours*

In this course, students will explore how new drugs are made available for ultimate use in appropriate patients. Topics covered include unmet medical needs, discovery, pre-clinical and clinical development, regulatory pathways, and the roles of various healthcare professionals. The goal of the course is to provide an opportunity for students to learn the contemporary processes that lead to discovery and development of medications that address unmet medical needs.

#### **PHRD 692 – Introduction to Managed Care Pharmacy**

*Credit: 1.0 hour*

The course will include guest speakers, small group activities, presentations, and group discussions. Some topics presented include but not limited to: managed care pharmacy concepts and practices, prescription drug benefit design, formulary management, specialty pharmacy, medication therapy management (MTM), drug use evaluation (DUE). By course completion, the student pharmacist will obtain knowledge of managed care pharmacy principles that will serve as valuable preparation for experiential education and career opportunities in a variety of practice settings (including managed care organizations, hospital administration, pharmaceutical industry, and community pharmacy management).