

Course Descriptions

Core Courses

First Professional Year

P145 Immunology/Biotechnology 3 credits
This course provides foundational knowledge of the functions of the immune system at the molecular, cellular, and anatomical levels. The first part of the course describes the innate and adaptive immune systems, their cells and anatomical structures, their intricate methods of cell-cell communication, and how immune responses can be mounted against a virtually unlimited array of pathogens while minimizing collateral damage to the host. In later sections, we will consider immunodeficiencies, immune responses in cancer and transplantation, and the unwanted consequences of immune responses in inflammation, hypersensitivity, and autoimmune diseases, and the drugs and vaccines to treat those conditions. Finally, the course will introduce some biotechnologies that are fueling the rapid discovery and development of vaccines and immunotherapeutic agents for a wide variety of diseases.

P161 Pharmaceutics I 3 credits
Students are introduced to biopharmaceutical aspects of a variety of dosage forms. They will become familiar with the format of prescriptions and the organization and contents of monographs and their appendices. The application of mathematics to the preparation of prescriptions and drug products. The design, preparation, properties, and evaluation of solution dosage forms including incompatibilities will be introduced. Pertinent physical and chemical principles involving solubility, pH effects, selection of excipients (e.g., color, flavor, buffers, preservatives) and their effect on the performance and quality of these dosage forms will be examined. Students will become familiar with Oral solutions, ophthalmic solutions and colligative properties.

P151 Medicinal Chemistry I 4 credits
This course provides students with information regarding the chemical and physical properties of biomolecules. Moreover, the interrelated roles of these molecules in a functioning biological system are emphasized. A description of the metabolic pathways responsible for normal and abnormal human physiology are explored and an understanding of the fundamental relationships between biochemistry, medicinal chemistry and pharmacology is established. In addition, the biochemical impact of diseases and the drugs used to treat these conditions are identified.

P155 Principles of Infectious Diseases 3 credits
This course is designed to increase student understanding of the principles of medical microbiology. It focuses on the characteristics of medically important microorganisms and the anti-infectives used to treat them. The course is meant to serve as a basic science foundation for both the later clinical course that teaches the pathophysiology and therapeutics of infectious diseases and for clinical experiential experiences in the curriculum.

P140 Professional Practice 1 credit
This course is designed to serve as a forum to discuss professional issues as a transition into the profession. The goal of the course is to encourage students to embrace the mission of pharmacy care, which places the responsibility of optimizing outcomes resulting from drug therapy on the pharmacist. The profession of pharmacy will be discussed from an evolutionary perspective to give the students a clear sense of our past, the present and a vision for the future. The Professional Practice Course also serves as the start of the Career Development Program at the School of Pharmacy. During the semester, students will be introduced to a variety of career paths available to pharmacists and the entry requirements for each career.

P171 Pharmacy Lab I 1 credit
Upon the conclusion of this course students will have been introduced to biopharmaceutical aspects of a variety of dosage forms. They will become familiar with the format of prescriptions and the organization and contents of monographs and their appendices. The application of mathematics to the preparation of prescriptions and drug products. The preparation, properties, and evaluation of solution dosage forms including incompatibilities will be introduced. Student will become familiar with prescriptions and physician orders. Student will learn to take and interpret vital signs.

P146 Drug Information 1 credit
This course prepares students to serve as effective providers of drug information. An effective provider of drug information perceives, assesses and evaluates drug information needs and retrieves, evaluates, communicates and applies data from the published literature and other sources as an integral component of pharmaceutical care.

P164 Pharmacology I 4 credits
The goal of this course is to present the student with the basic principles of pharmacology to enhance their ability to apply this knowledge to the practice of pharmacy. Specifically, the principles involved in the ADME (absorption, distribution, metabolism, and elimination) of drugs, their mechanism of drug action, adverse effects, drug interactions, and misuse are covered. Additionally, students will develop critical thinking about the use of drugs and an understanding of the importance of pharmacology principles to understanding and practice of safe and effective medicine treatment. Students will also be introduced to an appreciation for the importance of life-long learning of drug action in pharmacy practice. Pharmacology-I concentrates on peripheral drug action.

P162 Pharmaceutics II 3 credits
The description, preparation and product care for the following types of pharmaceutical products: parenterals, creams, lotions, paste, gel, suppositories, aerosols, suspensions, emulsions, tablets and capsules will be extensively covered. Selection of excipients and their effects on performance and quality, chemical incompatibilities among drugs and excipients, drug degradation, surfactants, and pharmaceutical polymers will be discussed. In addition, students will also learn the most recent trends in pharmaceutical sciences such as nanomedicine and biotechnology.

P152 Medicinal Chemistry II 4 credits
The course is designed to provide an understanding of the importance of molecular structure and molecular properties in determining the pharmacodynamic (PD) and pharmacokinetic (PK) profiles of drug molecules. Basic principles/concepts/themes in medicinal chemistry will be introduced early in the course including signal transduction; transporters; pharmacophores and lead modification. These concepts are then applied to various drug classes such as cholinergics, adrenergics, cardiovascular and antimicrobial agents. The mechanisms of action of drug classes, common side effects of drug classes, and the structural features of drug molecules that are responsible for their activity (structure-activity relationships; SARs) will be major topics covered throughout the semester.

P142 Social and Economic Aspects of Healthcare 2 credits
This course is designed to introduce students to the US Healthcare System in relation to social, behavioral and economic factors that they will encounter in various practice settings. Emphasis will be placed on developing competencies to effectively interact with patients and other healthcare professionals within the context of providing optimal pharmaceutical care from cost and quality perspectives. The student will have increased awareness of expanding opportunities for pharmacists within our healthcare system that have been created by social and economic factors. This course will be a platform for students to master healthcare terminology and correlate this information with learned clinical skills for application to real world social and economic issues that impact our health care system.

P172 Pharmacy Lab II 1 credit
This second laboratory experience focuses on the application of mathematics to the preparation of prescriptions and drug products related to aerosolized and solid dosage forms. The preparation, properties, and evaluation of pharmaceutical inhalers/nebulizer, ointments, creams, emulsions, suspensions and suppositories will be introduced and discussed. Student will become familiar with prescriptions and physician orders as they relate to these particular dosage forms.

P148 Introduction to Pharmaceutical Care 2 credits
This course was developed to provide a bridge between the pharmaceutical science courses and the clinical courses in the curriculum. Throughout this course, students will learn how to assess clinical laboratory tests to monitor the efficacy and safety of patients' drug regimens, individualize patient care with a focus on special patient populations; identify and manage adverse drug reactions; assess patients with OTC conditions; manage pain; and classify drug-related problems. Students will also learn how to calculate the patient's creatinine clearance in order to accurately dose medications that are excreted by the kidneys, and perform a practice recitation in smaller groups.

P136 IPPE – PY1 2 credits
Students are introduced to the practice of pharmacy by spending a half-day with a faculty member within the faculty member's clinical practice and they are asked to reflect upon their experience. They will also spend 160 hours in a community pharmacy setting, where they will evaluate and process prescriptions under supervision, conduct interviews and medication histories, perform inhaler education and adherence teaching, answer drug information questions, document drug related problems (DRPs), and perform calculations. Students will document these activities in a notebook that is turned in for review.

Second Professional Year

P265 Pharmacology II 3 credits
This course is the 2nd semester of a two-semester sequence. The mechanisms of drug action, absorption, distribution, metabolism, adverse effects, drug interactions, and misuse are covered especially in relation to complex central nervous and endocrine control systems.

P261 Concepts in Pharmacogenomics 3 credits
The student is presented with contemporary pharmacogenetic principles as they apply to the innovations in medication therapy. An overview of genetic factors contributing to drug metabolism and drug response is presented. The connection between the genetic makeup of individuals and how that defines the reaction of the human body to drug therapy is explored with a focus on the relationship between genetic variability and the adverse effects of drug therapy. Topics in the course provide a background to reinforce the disciplines of drug metabolism, pharmacogenomics, and clinical pharmacy practice. Basic procedures in the pharmacogenetic evaluation of patients will be addressed during the lab exercises. Students are expected to understand, and be able to disseminate/communicate new knowledge about human genome and genetic variability to patients, health professionals, and public health.

P251 Medicinal Chemistry III& Natural Products 4 credits
This course continues with the concepts of SAR developed in Medicinal Chemistry II and applies them to other drug classes including; antihistamines, local anesthetics, analgesics, CNS agents, steroids and antineoplastics.

P248 Communication Skills 1 credit
This course is designed to introduce students to the importance of effective written and verbal communication skills in the practice of pharmacy. The educational methods and active learning strategies employed in this course include turning point, class discussions, short lectures, videos, problem-based learning, recitations and written assignments. This is a one-credit course consisting of lecture and labs/recitation sessions. This course will be mostly discussion based and all students will be required to participate. If there is a lack of class participation, the instructors will randomly call on students.

P271 Pharmacy Lab III 1 credit
This lab is the third lab in a sequence of four labs of Pharmaceutic III Lab. Laboratory work focuses on compounding of various dosage forms and calculations. The Pharmacogenomics section of Pharmaceutics III Lab (10/12/15 through 11/3/15) focuses on extraction, quantification, and analysis of genetic material (DNA). 2 Course Goals and Objectives: Upon the conclusion of this course students will have been introduced to general properties and biopharmaceutics of a variety of dosage forms. They will become familiar with the format of prescriptions and the organization and contents of monographs and their appendices. They will be proficient in the application of mathematics for the preparation of prescriptions and drug products. The preparation, properties, and evaluation of pharmaceutical products for oral administration, genomics lab, durable medical equipment's, etc. will be introduced and discussed. Student will become familiar with prescriptions and physician orders as relate to the dosage forms. Students will be introduced to the basics of genetic material (DNA) collection, processing, and preparation for genotyping. The final outcome of this section is individual's identification as slow/fast metabolizer, in order to personalize pharmacotherapy intervention.

P233 Path/Ther Cardiopulm I 3 credits
This course helps understand the pathophysiology and appropriate therapy of common cardiac and pulmonary disease states. The students will be expected to use pathophysiologic information and drug therapy characteristics to develop and support a pharmacotherapeutic plan to treat each disease state. Emphasis will be on interpretation of clinical data pertinent to each disease state, identifying drug-related problems, identifying appropriate therapeutic goals, drug indications and regimens, and monitoring parameters for efficacy and toxicity.

P235 Path/Ther Pediatrics 1 credit
This course is designed to help students gain an appreciation for the developmental differences between newborns, infants, children adolescents and adults; and to gain the knowledge and skills needed to develop a pharmacy care plan for patients experiencing common pediatric diseases. Learning activities in this course provide students with the opportunity to refine problem solving skills and practice performing pediatric pharmaceutical calculations.

P239 Pharm Care Rec I 1 credit
The purpose of this course is to assist you in developing a consistent method of pharmacy practice that will improve patient care. The term used to describe this type of practice is *pharmaceutical care*. A properly designed pharmaceutical care plan will help to identify actual drug related problems, to resolve existing problems or to prevent a drug related problem from occurring. If pharmacists are successful in this regard, the result will be improved clinical outcomes, improved patient satisfaction and quality of life, and a reduction in drug-related morbidity and mortality.

Third Professional Year

P312 Adverse Drug Reactions: An Organ System Approach 2 credits

This course will cover the mechanisms of adverse drug reactions that affect various organ systems of the body. One may also consider this course to be one of “drug-induced disease states”. The course is designed to allow the students to identify these mechanisms and how they compare/contrast to other non-drug causes of disease states. The most common drugs involved in these reactions along with treatment plans, at risk patient factors and preventative strategies will be highlighted in this course. This course will also prepare students who wish to continue their studies of adverse drug events for an elective course *Adverse Drug Reaction Analysis* which will be offered to all students, and it also part of both the Drug Safety and Clinical Tracks.

P352 Economics of Health Care 3 credits

This course has been developed to enhance the knowledge and skills to support the environment enabling pharmaceutical practice to be provided by pharmacists. Financial management and health economics form the foundation to apply various principles enabling pharmaceutical services to be provided to patients. Planning strategies for future pharmacists will be emphasized, along with a view of the external environment surrounding practice. Any enterprise must be fiscally viable.

P325 Path/Ther of Infectious Diseases 3 credits

This course is designed to increase the students understanding of the pathophysiology and appropriate therapy of common infectious diseases. The students will be expected to use pathophysiologic information and drug therapy characteristics to develop and support a pharmacotherapeutic plan to treat each disease state. Emphasis will be placed on a systematic approach that can be applied to the treatment of most infectious diseases and on key points of therapy for specific infections. Students are expected to remember and/or review content taught in previous courses, including prior pathophysiology and therapeutics modules.

P321 Path/Ther Neurology/Psychiatry 3 credits

This module will assist you in understanding and applying the pathophysiologic and therapeutic principles of selected neuropsychiatric conditions in which pharmacists play a key role in optimizing drug therapy. Cases will be discussed in class to provide students with the opportunity to identify key subjective and objective information and to develop appropriate, evidence based, drug related assessments and care plans. Emphasis will be placed on the student’s ability to interpret pertinent data, to identify drug related problems, and to develop therapeutic plans with goals, monitoring parameters and counseling points. Students are expected to remember and/or review content taught in previous courses, including prior pathophysiology and therapeutic modules.

P347 Pharmacy Care Recitation III 1 credits
The purpose of this recitation is to assist you in developing a consistent method of pharmacy practice that will improve patient care. The term used to describe this type of practice is *pharmaceutical care*. According to the American Society of Health-System Pharmacists (ASHP), *pharmaceutical care* is the “direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient’s quality of life.” A properly designed pharmaceutical care plan will help to identify actual or potential drug related problems, to resolve existing problems or to prevent them from occurring. If pharmacists are successful in this regard, the result will be improved clinical outcomes, improved patient satisfaction and quality of life, and a reduction in drug related morbidity and mortality.

P342 Pharmacy Law 2 credits
This course is designed to introduce the laws and regulations pertaining to the practice of pharmacy. Federal and states laws and regulations are reviewed, including but not limited to: Federal Food, Drug & Cosmetic Act; the Poison Prevention Packaging Act; the Prescription Drug Marketing Act; the federal Controlled Substance Act; the Pennsylvania Code and the Pennsylvania Pharmacy Act.

P313 Clinical Pharmacokinetics 3 credits
This course is designed to provide students with exposure to and hands-on experience applying pharmacokinetic (PK) and pharmacodynamic (PD) principles. Drug classes most commonly seen in clinical practice will be specifically evaluated and reviewed. The first half of the semester is designed to provide a review of PK and PD principles in various disease states and special patient populations. This will serve as a foundation for application of PK principles to other drug classes. The second half of the semester will deal with other various drug classes that require therapeutic drug monitoring. Emphasis will be placed on the use of mathematical principles to predict drug disposition in individual patients. Situations and clinical conditions that are likely to alter the concentration:time and/ or concentration:effect relationship will also be emphasized. In addition, concentration:effect and effect:time relationships will be explored and applied to clinical situations.

P338 P/T GI/ Nutrition and Renal 3 credits
This course is designed to increase the students understanding of the pathophysiology and appropriate therapy for acute and chronic renal disorders as well as gastrointestinal and liver disorders. Cases will be discussed in class to provide students with the opportunity to identify key subjective and objective information to develop appropriate, evidence based, drug related assessments and care plans. Emphasis will be placed on the student’s ability to interpret pertinent data, to identify drug related problems and to develop therapeutic plans with goal, monitoring parameters and counseling points.

P323 P/T Oncology and Immunology 3 credits
This course is designed to increase the students understanding of the pathophysiology and appropriate therapy for auto-immune and oncologic disorders and applicable treatment and monitoring. Cases will be discussed in class to provide students with the

opportunity to identify key subjective and objective information to develop appropriate, evidence based, drug related assessments and care plans. Emphasis will be placed on the student's ability to interpret pertinent data, to identify drug related problems and to develop therapeutic plans with goal, monitoring parameters and counseling points.

P348 Pharmacy Care Recitation IV 1 credits
The purpose of this recitation is to assist you in developing a consistent method of pharmacy practice that will improve patient care. The term used to describe this type of practice is *pharmaceutical care*. According to the American Society of Health-System Pharmacists (ASHP), *pharmaceutical care* is the "direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient's quality of life." A properly designed pharmaceutical care plan will help to identify actual or potential drug related problems, to resolve existing problems or to prevent them from occurring. If pharmacists are successful in this regard, the result will be improved clinical outcomes, improved patient satisfaction and quality of life, and a reduction in drug related morbidity and mortality.

P336 IPPE – PY3 2 credits
Students will perform 56 hours of patient education counseling for inpatients under the supervision of a faculty member or Temple University Hospital clinical pharmacists in providing warfarin counseling and smoking cessation counseling. The goals of this experience are to exhibit comfort in speaking to "real" patients, refine communication techniques, demonstrate critical thinking, and develop patient-driven adherence strategies. Students may also go to the School of Dentistry's Diagnostic Radiology Clinic (DRC) one day a week and work collaboratively with dental students in performing medication histories and smoking cessation counseling. They are also expected to participate in professional and service learning activities such as health fairs, blood pressure screenings, and brown bag medication review events over 20 hours in the PY2 and PY3 years. Students will document these activities in a notebook that is turned in for review and will write a reflective statement.

Fourth Professional Year

P406 APPE-In-Patient 6 credits
This rotation involves the pharmaceutical care and monitoring of patients on an inpatient medicine service. Students will participate in discussions of pharmacotherapy options for the patients on their service, and are responsible for the monitoring of their patients. Students will interview patients, collect and assess subjective and objective data, evaluate individual drug therapy regimens and disease state control, perform pharmacokinetic monitoring, perform medication reconciliation, and provide medication education to both patients and health care providers. Students will participate in journal club and provide an in-service presentation, will communicate verbally and in writing, and display professional and ethical behavior.

P411 APPE-Elective 6 credits
Students will participate in two of these experiences. Practice venues include, but are not limited to, a second inpatient clinical or community rotation, the pharmaceutical industry, medical writing companies, compounding pharmacies, medical mission trips to areas such as Guatemala and Vietnam, the Food and Drug Administration, the Institute for Safe Medication Practices, poison control centers, managed care organizations, and long term care pharmacy. Students will communicate verbally and in writing, and display professional and ethical behavior.

ELECTIVE COURSES (taken in the third professional year)

P310 Managed Care Elective 2 credits
This elective course incorporates new educational material in various aspects of managed care, including but not limited to principles of insurance design, history and development of managed care, financial aspects, modeling and projections in disease prevalence and incidence, the marketplace and competition, negotiations with providers and the concept of gatekeepers in primary care, reinsurance and “report cards.”

P314 Practical Public Health for Pharmacists 3 credits
There is a growing need for pharmacists to be trained in public health. Although the public health role of the pharmacist has yet to be clearly defined, the pharmacist provides a wealth of health information as well as services and activities that are often public health related. This course will focus on the practical aspects of the 5 public health foundation disciplines: health services, epidemiology, biostatistics, social/behavior health, and environmental health.

P315 Advanced Clinical Practice I 2 credits
This course is designed to enhance the student’s skills necessary for practicing clinical pharmacy. The goal of the course is to provide students with an understanding of the full scope of possibilities and responsibilities necessary for providing a clinical service and/or enhancing the practice of clinical pharmacy. Students will get more of an understanding of pharmacy practice by building upon the multiple skills already attained from different courses and applying them in scenarios that reflect actual clinical practice. Throughout the course, discussions will take place regarding issues such as life-long learning and responsibilities to the profession.

P316 Advanced Clinical Practice II 2 credits
This course is designed to succeed Advanced Clinical Practice I. This course continues to build upon concepts and skills presented in the first course to enhance the student's skills necessary for practicing. The goal of the course is to provide students with an understanding of the full scope of possibilities and responsibilities necessary for providing a clinical service and/or enhancing the practice of clinical pharmacy. Students will gain more of an understanding of pharmacy practice by building upon the multiple skills already attained from different courses and applying them in scenarios that reflect actual clinical practice. Throughout the course discussions will take place regarding issues such as life-long learning and responsibilities to the profession.

P317 Pharmacist in Transitional Care 2 credits
This course is designed to give students an opportunity to examine the role of the pharmacist in patient care during times of transition in the healthcare system. The student will become aware of the challenges and disparities that may present at key points in the transition of care and learn optimal ways to improve the care process.

P319 Independent Community Pharmacy Ownership "101" 2 credits
Provide current and up-to-date information on how to establish, operate and manage an independent community retail pharmacy that includes the application process with the city, state and the DEA and how to produce a comprehensive business & financial plan. Provide the study of different locations and their demographics. Discuss how to manage the construction phase and the development of a Pharmacy retail store. Discuss how to negotiate contracts with PBMs and drug suppliers. Discuss how to hire new employees and how to manage the Pharmacy business operation & workflow. Discuss customer service best practices. Discuss how to manage dispensing system, cash flow, accounting, advertising and public relations. Discuss daily legal matters, rules, regulations and inspections. Understand and manage Profit & Loss statements.

P354 Pharmaceutical Care in Ambulatory Practice 2 credits
This course is designed to introduce students to clinical services that can be provided by pharmacists in a community or ambulatory setting. Such services include medication therapy management, comprehensive clinical management of common ambulatory care disease states, and patient counseling. This course also aims to expose students to the principles behind developing an ambulatory care clinic and reimbursement for such services.

P355 Drug Interactions: Mechanisms, Analysis and Clinical Applications 2 credits
The course will review the detailed mechanisms of drug interactions, focusing on analysis of the clinical significance of such interactions, with the appropriate plan to manage such occurrences in patient's medication therapy. The primary goal of the course is to improve students' knowledge and skills pertaining to these interactions, enabling them to identify, assess, and develop plans in an evidence-based patient specific manner.

P361 Pharmacy Practice for the Geriatric Patient 2 credits
The elective focuses on general principles of aging in relation to clinical concepts and applications of pharmacotherapy for geriatric patients. Lectures include presentations on wellness and illness in relation to continuum of care. PY3 students learn to develop clinical skills that guide inter-professional decisions concerning appropriate levels of care for individual patients. Selected topics include but are not limited to: aging demographics and epidemiology; the biology of aging, pharmacokinetic/pharmacodynamic aspects of drug disposition in the aged population; common versus atypical presentation of specific diseases/syndromes; role of the pharmacist in geriatric assessment; design and implementation of a therapeutic plan; end of life care; and identification of research methods and tools used to determine medication appropriateness in elders.

P365 Outcomes in Diversity 3 credits
This course provides students with a global perspective on the influence of racism in pharmacy education, pharmacy practice and minority health care. Students are introduced to demographic and epidemiological data related to ethnicity and health care, and the historical circumstances that have led to the current imbalance and roles played by minority individuals.

P366 Seminar I 2 credits
This course has been developed to provide students with the opportunity to develop and refine professional speaking skills while preparing and delivering evidence based topical presentations. Students will gain practice conducting literature searches, analyzing the medical literature, and developing teaching materials to enhance their presentations. The Seminar Course serves as a vehicle to utilize all of the skills and knowledge you have gained in Pharmacy School while strengthening written and verbal communication skills in preparation for the APPEs.

P370 Seminar in Pharmaceutical Ethics 2 credits
The didactic portion of the class will consist of short lectures delivered by the course coordinators. The lectures will be targeted at allowing the student to develop a step-wise process to identify ethical dilemmas. Also specific examples of ethical issues in pharmacy practice will be addressed. In addition a decision-making process to aid in the resolution of ethical situations will be presented to the students for use throughout the semester in group problem-solving exercises. The group problem-solving exercises will comprise a large portion of the class time. All students are expected to be active participants in the problem solving discussions. The class may be divided in half with each instructor leading their own discussion group looking at one of the sides of the ethical scenario at hand. Each group, with that week's designated leader/presenter, will then present their findings on the scenario to the entire class and alternate viewpoints will be discussed. Each week one to four new ethical scenarios will be presented to the class for discussion in this manner. Students are encouraged to submit, at any time, written ethical dilemmas that they have experienced during their current professional experience. The student's scenarios may be utilized in class at the end of the semester during student directed class time.

P372 Current Issues in Medication Errors 2 credits

This course will provide a comprehensive review of the field of medication errors. Medication errors and human perspectives, the shared responsibility in preventing medication errors, and specific medication errors relating to specific patient populations, and steps within the medication use process system will be thoroughly examined. Emphasis will be placed on the identification of measures to prevent medication errors.

P373 Concepts in Home Infusion Therapy Elective 2 credits

This course is Interactive case/lecture based. There may be periodic homework assignments given in which students are presented with information based on that week's lecture (i.e. after antibiotic lecture, a fictional patient is started on an antibiotic for home infusion) which then will be documented in the form of notes, verbal orders, and other types of communication.

P376 Women's Health Care Elective 2 credits

Throughout their lives women face unique health related problems and they represent over 50% of the population. Despite this many health related problems facing women are discussed superficially in pharmacotherapy core curriculum. A government agency such as the National Institute of Health has declared women's health as a priority area of research and education. This course is designed to enhance the knowledge pharmacy students in the area of women's health.

P378 Critical Care 2 credits

The course will offer an introduction to the pharmacotherapeutic management of the critically ill patient. The pathophysiology and drug therapy of selected problems in the critically ill population will be covered. Students in the course will discuss these topics with a number of activities throughout the semester. The course will strengthen the student's ability to evaluate and apply primary literature as well as practice verbal presentation skills. Active participation will allow the student to develop his/her clinical skills in real-life situations.

P380 Adverse Drug Reactions II: Case Studies 2 credits

This course is a continuation of the Adverse Drug Reaction is part of the course requirements of the Drug Safety Track. It is also an elective in the Advanced Clinical Track and available also to any student who desires to further their knowledge in this topic. New topics and case study presentation of previous covered topics will highlight this course. Mechanisms of drug-induced disease, outcomes, treatment modalities, and preventive strategies will be covered in this course. Also in this course, will be a student project in which students will actually report and adverse drug reaction, analyze the event in regards to probability, outcomes, treatments, preventability, and cite similar cases in literature. Opportunities for possible publication and presentation of these case reports exist for students in this course.

P381 Clinical Drug Development 3
credits

This course studies the drug development process from discovery through FDA marketing approval. It reviews the process of development and the interrelationships linking the various disciplines, introducing students to regulations governing the process, including the interactions with FDA, ICH, and other regulatory agencies.

P383 Good Clinical Practices 3 credits

The focus of this course on current good clinical research practices for the development of eventual marketing to the health care community will be on quality and integrity in the conduct of a clinical trial through compliance with existing regulatory standards.

P384 Medication Error Surveillance and Control Planning 2 credits

This course will discuss the most effective ways to detect medication errors, analyze them to understand their causes, and prevent future errors. Emphasis will be placed upon medication error analysis, using medication error data effectively, and managing risks associated with the medication process using high leverage strategies. Students will investigate the use of tools designed to measure medication safety and the success of error reduction efforts, and analyze the environment necessary to establish a culture of safety.

P388 Clinical Trial Management 3 credits

Completing clinical investigations with a strong set of usable data is the goal of all good clinical trial managers. The course will cover preparation of investigator documentation, case report form creation, study creation, initiation, monitoring, data gathering and management, drug supply management, final reporting and quality assurance requirements, in order to meet that goal effectively.

P 389 Research 1-3 credits

Individual research projects arranged with faculty.

P390 Special Projects-P & T Competition Elective 2 credits

This course gives the student Pharmacist some "real world" experience with condensing a large volume of information and data into manageable information for P & T committee members by presenting key facts in a readily accessible format. The monograph that each team will prepare must contain a comparison of the value of this product to existing therapies based on available clinical and economic evidence presented in the dossier and discovered through each team's independent research. And provide students with an opportunity to mentor younger students for the local P & T Competition