

# PHARMACY (PMD)

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## **PMD-601 Biochemical Principles I (3 credits)**

Students learn about the structure/ function relationships among the components responsible for the biochemical functions of life. The first semester topics include proteins, enzymes, carbohydrates, bioenergetics, metabolism (catabolism and anabolism) lipids, membranes, nucleic acids, biotechnology, biochemical methods, vitamins and nutrition.

## **PMD-603 Anatomy Physiology Pathophysiology I (4 credits)**

This is the first of two courses in which students learn about the structural and functional relationships of the human organism, emphasizing cells and tissues, the integumentary, skeletal, muscular, nervous systems, and sense organs. Students build a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function throughout life, emphasizing disease processes as disturbances of the body's homeostasis. The body's defense mechanisms and their breakdown, and clinical assessment methods are also presented in the course. Students view classroom demonstrations that examine the skeletal, muscular, and nervous system, and their composite cell and tissue types.

## **PMD-604 Anatomy Physiology Pathophysiology II (4 credits)**

Comprehensive Anatomy, Physiology and Pathophysiology II + laboratory provides a sequel to PMD-603 and PMD-613; the course continues examination of organ systems. Material includes anatomical description, physiological explanations, and pathological states, considered as disruptions of the normal anatomy and physiology. Etiology, pathogenesis, and treatment approaches will be discussed. This course will undertake coverage of: cell physiology and response to injury, inflammation, fever, healing, cell cycle and neoplasia, musculoskeletal and joint disorders, neurophysiology, neurological & psychological disorders, pathophysiology of selected endocrine glands, physiology and disorders of the digestive system and selected auxiliary glands (liver and pancreas).

## **PMD-605 Pharmacokinetics (3 credits)**

This course introduces drugs as molecules, including the basic principles related to molecules such as equilibrium and kinetic phenomena. Initial information provided in the course also includes the molecular basis of drug selectivity and drug action. The latter portion of the course then focuses on the primary determinants of the disposition of drugs in the body, namely absorption, distribution, metabolism and excretion.

## **PMD-606 Medicinal Chemistry (3 credits)**

The initial portion provides an introduction to the role of pharmacology in pharmacy and moves on to basic receptor pharmacology and enzymology. The course then continues the molecular basis of pharmacologic activity, protein binding, complexation and drug action. Basic aspects of medicinal chemistry and drug metabolism are also covered. The latter portion of the course then delves into various dosage forms and routes of drug delivery.

## **PMD-607 Prof of Pharmacy & Health Care Systems (3 credits)**

This course introduces students to the evolving US health care system. Students learn about the social, economic, and political environments in which health care is delivered, and the impact of these factors on the practice of pharmacy. By examining personal strengths and weaknesses, exploring career options, and thinking and writing reflectively, students will develop lifelong learning skills.

## **PMD-608 Pharmaceutics (3 credits)**

The initial portion provides an introduction to the role of pharmacology in pharmacy and moves on to basic receptor pharmacology and enzymology. The course then continues the molecular basis of pharmacologic activity, protein binding, complexation and drug action. Basic aspects of medicinal chemistry and drug metabolism are also covered. The latter portion of the course then delves into various dosage forms and routes of drug delivery.

## **PMD-609 Pharmacodynamics (2 credits)**

The initial portion provides an introduction to the role of pharmacology in pharmacy and moves on to basic receptor pharmacology and enzymology. The course then continues the molecular basis of pharmacologic activity, protein binding, complexation and drug action. Basic aspects of medicinal chemistry and drug metabolism are also covered. The latter portion of the course then delves into various dosage forms and routes of drug delivery.

## **PMD-610 Hlth Comm Diversity & Bioethics Communications/Diversity/Bioethics (2 credits)**

Students learn to apply the theoretical principles for communicating effectively with patients, families, and physicians, other health professionals, and provider groups. Students discuss the impact of race, sexual orientation, culture, religion, and physical ability on patients' perceptions of the healthcare system and the delivery of services. Students also learn to recognize ethical dilemmas and resolve problems using basic ethical principles and an ethical decision-making process.

## **PMD-611 Prof Dev of Student Pharmacist I (2 credits)**

This is the first in a six-term sequence of courses that augments and enhances student learning throughout the didactic curriculum. In this first course, students will be introduced to the profession of pharmacy including the evolution of practice from a dispensing to a pharmaceutical care model. Through team-based learning students will systematically analyze patient cases using scientific and clinical reasoning. They will utilize sources of professional knowledge, strategies for accessing drug information and literature, and quantitative and qualitative data to support decision making. To help students (and faculty) assess their progress in achieving curricular and professional goals, they will create a professional e-portfolio that will help them manage various types of evidence that reflect their learning and growth.

## **PMD-612 Prof Dev of Student Pharmacist II - Patient Assessment (2 credits)**

This is the second in a six-term sequence of courses. Students participate in team-based learning to foster a deeper understanding of course material, and develop necessary skills through case discussion and other active learning methods.

## **PMD-613 Patient Assessment I (1 credits)**

In this practicum course, students will learn and practice the fundamentals of patient assessment, including physical examination, interviewing skills (such as history taking and symptom analysis) and interpretation of laboratory test results. Students will also become familiar with common drug names, categories, dosing and therapeutic uses. Classroom time will be a combination of large and small group work. Skill-based activities, such as the practicing of components of a physical examination, will be practiced in student pairs with designated small teams.

**PMD-614 Patient Assessment II (1 credits)**

In this course, students will learn and practice the fundamentals of patient assessment, including physical examination, interviewing skills and interpretation of laboratory test results. Students will also become familiar with common drug names, categories, dosing and therapeutic uses, as well as counseling skills based on the top medications. Classroom time will be a combination of large and small group work. Skill-based activities, such as the practicing of the components of a physical examination, will be demonstrated in student pairs with designated small teams.

**PMD-617 P1 IPPE Community (2 credits)**

The IPPE program provides the first "real world" experience for students in a variety of practice settings. Students complete 300 rotation hours designed to provide opportunities to apply the knowledge, skills, and behaviors expected of a graduate of the School of Pharmacy. Upon completion of the experiences students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate prepared to enter the APPE sequence. Throughout the rotation series students will be required to complete and document experiences, which may include patient interactions, presentations, and assignments. Additional assignments may be requested at the behest of the assigned preceptor. Evidence of mastery of the school's educational outcomes will be compiled and housed in our electronic learning management system. The IPPE program will build upon student knowledge and skills which are taught through the first three didactic years.

**PMD-618 Community IPPE (1 credits)**

The IPPE program provides the first "real world" experience for students in a variety of practice settings. In total, students complete 300 rotation hours designed to provide opportunities to apply the knowledge, skills, and behaviors expected of a graduate of the School of Pharmacy. Upon completion of these experiences, students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate prepared to enter the APPE sequence. Throughout the entire rotation series, students will be required to complete and document experiences, which may include patient interactions, presentations, and assignments. Additional assignments may be requested at the behest of the assigned preceptor. Evidence of mastery of the school's educational outcomes will be compiled and housed in our electronic learning management system. The IPPE program will build upon student knowledge and skills which are taught through the first three didactic years.

**PMD-619 P1 IPPE Institutional (1 credits)****PMD-620 Hospital IPPE (1 credits)****PMD-621 Topics in Pharmacy I Assessment (0 credits)****PMD-622 Topics in Pharmacy II (0 credits)****PMD-624 Self-Care (3 credits)**

Students learn about the role of the pharmacist in the management of self-limiting illnesses and self-care. Students learn appropriate triage and referral techniques and the advantages and disadvantages of a variety of non-prescription products and devices, as well as complementary and non-pharmacologic interventions utilized for self-care problems.

**PMD-626 Introductory Pharmacy Calculations (2 credits)**

The ability to perform consistently accurate calculations is pivotal to pharmacy practice and patient safety. This course introduces students to the basic principles of pharmaceutical calculations that are utilized in all practice settings, with an emphasis on problem analysis and problem solving.

**PMD-627 Interprofessional Collaborative Practice I: Foundations of Interprofessional Practice (0.5 credits)**

Interprofessional Collaborative Practice I: Foundations of Interprofessional Practice is the first offering in the Interprofessional Collaborative Practice course series in the School of Pharmacy. The backbone of this course series centers upon our partnership with the Indiana University TEACH program which "enables students to practice critically important, core interprofessional practice competencies while working on person- and community-centered teams to improve health and well-being." In the first year of the series, students are introduced to the following interprofessional competencies: roles and responsibilities, communication, teams and teamwork, and value and ethics and complete authentic activities with prescribers, other healthcare professionals, residents, and students focused on roles and responsibilities through the exposure phase of the IU TEACH program and other D'Youville-specific activities. In the second year of the series, the competencies introduced during the first year of the course are re-enforced with focus shifting to teams, teamwork, and communication and a chance to practice these concepts in simulations and authentic activities with prescribers, other healthcare professionals, residents, and students. In the third year of the series, students focus shifts to interprofessional value and ethics and practice of these interprofessional competencies through simulation and authentic activities with prescribers, other healthcare professionals, residents, and students.

**PMD-628 Interprofessional Collaborative Practice II: Foundations of Interprofessional Practice (0.5 credits)**

Interprofessional Collaborative Practice II: Foundations of Interprofessional Practice is the second offering in the Interprofessional Collaborative Practice course series in the School of Pharmacy. The backbone of this course series centers upon our partnership with the Indiana University TEACH program which "enables students to practice critically important, core interprofessional practice competencies while working on person- and community-centered teams to improve health and well-being." In the first year of the series, students are introduced to the following interprofessional competencies: roles and responsibilities, communication, teams and teamwork, and value and ethics and complete authentic activities with prescribers, other healthcare professionals, residents, and students focused on roles and responsibilities. In the second year of the series, the competencies introduced during the first year of the course are re-enforced with focus shifting to teams, teamwork, and communication and a chance to practice these concepts in simulations and authentic activities with prescribers, other healthcare professionals, residents, and students. In the third year of the series, students focus shifts to interprofessional value and ethics and practice of these interprofessional competencies through simulation and authentic activities with prescribers, other healthcare professionals, residents, and students. This course positioned as the second in the series includes additional didactic work to supplement authentic activities with prescribers and other allied health professionals encountered in this course series.

**PMD-689 Special Topics (1-3 credits)****PMD-697 Remediation (0 credits)**

This course will serve as remediation for P1 Fall Course Remediation

**PMD-698 Remediation (0 credits)**

This course will serve as remediation for P1 Spring Course Remediation

**PMD-701 Principles of Drug Action III (2 credits)**

This is the final course of the three-course sequence. Students continue to learn how dosage forms and routes of delivery affect the disposition of drugs. Students also learn about recent advances in pharmaceutical dosage forms (such as protein pharmaceuticals) that are utilized in current and future pharmacy practice.

**PMD-702 Medical Microbiology & Immunology (3 credits)**

Students learn the classification, morphology, and virulence of microorganisms and medical pathogens, the epidemiology and pathogenesis of infectious diseases, and the basic concepts of immunology. Students utilize their knowledge of immunology to understand the principles of antibiotic use, emphasizing the need to understand the site of infection, the susceptibility patterns for responsible organisms and the ability of the drug to reach the site of infection.

**PMD-703 Pharmacotherapeutics I (4 credits)**

This course is the first of a seven-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, drug disposition and pharmacology in order to optimize therapeutic outcomes. Specific topics covered will include the pharmacotherapy of: acute and chronic kidney disease, fluid and electrolyte disorders, acid-base disorders, erectile dysfunction, benign prostatic hyperplasia, and urinary incontinence.

**PMD-704 Pharmacotherapeutics III (4 credits)**

This course is the third of a seven-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, pharmacology and pharmacotherapy in order to optimize therapeutic outcomes for patients. Specific topics covered will include the pharmacotherapy of: anesthesia; neurologic disorders such as epilepsy, movement disorders and migraine headaches; psychiatric disorders such as schizophrenia, mood disorders, anxiety disorders, sleep disorders and dementia; and diseases of the eye.

**PMD-705 Pharmacotherapeutics II (4 credits)**

This course is the second of a seven-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, pharmacology and pharmacotherapy in order to optimize therapeutic outcomes. Specific topics covered will include cardiovascular and pulmonary disorders including hypertension, heart failure, ischemic heart disease, acute coronary syndromes, arrhythmias, cardiomyopathies, thromboembolism, hyperlipidemia, stroke, shock, asthma, chronic obstructive lung disease, acute respiratory distress syndrome, and cystic fibrosis.

**PMD-706 Pharmacotherapeutics IV (4 credits)**

This course is the fourth in a seven-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, drug disposition, and pharmacology in order to optimize therapeutic outcomes. Specific topics covered will include the pharmacotherapy of endocrine and gynecologic disorders including diabetes mellitus, thyroid disorders, adrenal and pituitary gland disorders, pregnancy and lactation, contraception, endometriosis and hormone replacement therapy in women.

**PMD-708 Evidence-Based Medicine I (2 credits)**

In this course, students learn basic concepts of research methodology in order to develop, analyze, and present their own research projects and critically evaluate the validity and clinical relevance of published articles. Students learn to appropriately analyze various types of data using parametric and non-parametric statistics, probability and inferential statistics (e.g. analysis of variance and multiple regressions).

**PMD-709 Integrated Compounding & Practice (3 credits)**

In this course, students practice the mathematical calculations required for compounding, dispensing, and administering medications including determination of the rate of administration of IV infusions, calculating drug concentrations and ratio strengths, as well as extent of ionization of drugs in solution. In laboratory sessions, students are provided opportunities to interpret prescription orders and prepare sterile and non-sterile dosage forms for dispensing.

**PMD-711 Prof Dev of Student Pharmacist III (1 credits)**

This is the third course in the six-term sequence. Students participate in team-based learning to foster a deeper understanding of course material, and develop necessary skills through case discussion and other active learning methods.

**PMD-712 Professional Development of a Student Pharmacist IV (1 credits)**

This is the fourth in a six-term sequence of courses. Students participate in team-based learning to foster a deeper understanding of course material, and develop necessary skills through case discussion and other active learning methods.

**PMD-713 Pharmacogenomics (3 credits)**

This course will introduce genetics and molecular and cellular biology and will describe the nature of genetic materials and the universal genetic code. Students should be able to identify and describe molecular mechanisms such as replication, transcription, and translation. The goal of this course is to enable students to understand how these disciplines can be used to explain the possible genetic basis for variability in drug response. Also, there will be discussion on the application of bioinformatics studies to pharmacogenomics and ethical issues in genomics. The pharmacogenetics of oxidative drug metabolism will be presented, as well as the potential applications to tailoring drug therapy. A discussion of drug transporters pharmacogenetics will include localization and function, variability, and clinical consequences. The role of genetic variability in drug targets on drug efficacy and toxicity, and application to individualize drug therapy will be explored. Finally, current, and future pharmacogenomics applications for several therapeutic areas such as oncology, hematology, infectious diseases such as HIV, TB, etc. will be described.

**PMD-714 Pharmacy Management (3 credits)**

In this course students learn the common management principles employed in the practice of pharmacy. Students learn business methods ranging from personal management to operations management, managing people, accounting basics and finance. Students also learn about marketing, purchasing, value-added services, and obtaining reimbursement for providing cognitive services as well as managing risks. Students are expected to apply concepts learned in class to prepare a business plan that provides the blueprint for buying an existing independent community pharmacy or developing a new pharmacy.

**PMD-717 P2 IPPE Community (2 credits)****PMD-718 Community IPPE (1-2 credits)**

The IPPE program provides the first "real world" experience for students in a variety of practice settings. In total, students complete 300 rotation hours designed to provide opportunities to apply the knowledge, skills, and behaviors expected of a graduate of the School of Pharmacy. Upon completion of these experiences, students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate prepared to enter the APPE sequence. Throughout the entire rotation series, students will be required to complete and document experiences, which may include patient interactions, presentations, and assignments. Additional assignments may be requested at the behest of the assigned preceptor. Evidence of mastery of the school's educational outcomes will be compiled and housed in our electronic learning management system. The IPPE program will build upon student knowledge and skills which are taught through the first three didactic years.

**PMD-719 P2 IPPE Institutional (1 credits)****PMD-720 Hospital IPPE (1-2 credits)**

The IPPE program provides the first "real world" experience for students in a variety of practice settings. In total, students complete 300 rotation hours designed to provide opportunities to apply the knowledge, skills, and behaviors expected of a graduate of the School of Pharmacy. Upon completion of these experiences, students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate prepared to enter the APPE sequence. Throughout the entire rotation series, students will be required to complete and document experiences, which may include patient interactions, presentations, and assignments. Additional assignments may be requested at the behest of the assigned preceptor. Evidence of mastery of the school's educational outcomes will be compiled and housed in our electronic learning management system. The IPPE program will build upon student knowledge and skills which are taught through the first three didactic years.

**PMD-721 Topics in Pharmacy III Assessment (0 credits)****PMD-722 Topics in Pharmacy IV (0 credits)****PMD-727 Interprofessional Collaborative Practice III: Building Interprofessional Skills (0.5 credits)**

Interprofessional Collaborative Practice III: Building Interprofessional Skills is the third offering in the Interprofessional Collaborative Practice course series in the School of Pharmacy. The backbone of this course series centers upon our partnership with the Indiana University TEACH program which "enables students to practice critically important, core interprofessional practice competencies while working on person- and community-centered teams to improve health and well-being." In the first year of the series, students are introduced to the following interprofessional competencies: roles and responsibilities, communication, teams and teamwork, and value and ethics and complete authentic activities with prescribers, other healthcare professionals, residents, and students focused on roles and responsibilities. In the second year of the series, the competencies introduced during the first year of the course are re-enforced with focus shifting to teams, teamwork, and communication and a chance to practice these concepts in simulations and authentic activities with prescribers, other healthcare professionals, residents, and students. This course, positioned first in the second year of the series, will require students to complete the TeamSTEPPS Certificate Course offered by the University and an authentic application of TeamSTEPPS, among other activities, in order to prepare students for simulation and authentic experiences in which these competencies will be practiced in the next trimester. In the third year of the series, students focus shifts to interprofessional value and ethics and practice of these interprofessional competencies through simulation and authentic activities with prescribers, other healthcare professionals, residents, and students.

**PMD-728 Interprofessional Collaborative Practice IV: Building Interprofessional Skills (0.5 credits)**

Interprofessional Collaborative Practice IV: Building Interprofessional Skills is the third offering in the Interprofessional Collaborative Practice course series in the School of Pharmacy. The backbone of this course series centers upon our partnership with the Indiana University TEACH program which "enables students to practice critically important, core interprofessional practice competencies while working on person- and community-centered teams to improve health and well-being." In the first year of the series, students are introduced to the following interprofessional competencies: roles and responsibilities, communication, teams and teamwork, and value and ethics and complete authentic activities with prescribers, other healthcare professionals, residents, and students focused on roles and responsibilities. In the second year of the series, the competencies introduced during the first year of the course are re-enforced with focus shifting to teams, teamwork, and communication and a chance to practice these concepts in simulations and authentic activities with prescribers, other healthcare professionals, residents, and students. This course, positioned second in the second year of the series, will require students to complete coursework, simulation, and authentic experiences centered on communication, teams, and teamwork in activities with prescribers and allied health professionals. In the third year of the series, students focus shifts to interprofessional value and ethics and practice of these interprofessional competencies through simulation and authentic activities with prescribers, other healthcare professionals, residents, and students.

**PMD-737 Research Elective (3 credits)**

This course sequence consists of two 3-credit hour electives on the subject of scientific methods, research planning and research report writing. Students will learn the fundamentals of proposing and conducting a research project including developing a hypothesis, conducting and analyzing experiments to progress that that hypothesis, and writing the results for presentation. In this process students will learn several techniques used in today's biomedical and pharmaceutical research and development laboratories as well as learn strategies used to perform research in basic cell biology/oncology, drug-biopolymer interactions, and drug characterization and development.

**PMD-797 Remediation (0 credits)**

This course will serve as remediation for P2 Fall Course Remediation

**PMD-798 Remediation (0 credits)**

This course will serve as remediation for P2 Spring Course Remediation

**PMD-801 U.S. Pharmacy Law (2 credits)**

This course introduces students to the federal and New York state laws and regulations which govern the practice of pharmacy and regulate the manufacture and distribution of drug products and devices. Students learn the basic principles of tort law and professional malpractice. Students apply concepts learned in class to the analysis of case studies. Students review the historical events that have shaped today's professional pharmacy practice, and learn about the drug development and distribution system from a legal perspective.

**PMD-802 Test2learnt Community-Based Pharmacogenomics (2 credits)**

This elective is part of the elective sequence required for the ACHIEVE Program. It can be taken after acceptance into the concentration or by permission from the instructor. This hybrid elective is a certificate program offered in conjunction with NACDS explores the community pharmacists' role in pharmacogenomics. The Test2Learn™ Community-based Pharmacogenomics Certificate Program is a highly-interactive educational experience offered in conjunction with NACDS and the University of Pittsburgh School of Pharmacy that teaches the principles of pharmacogenomics as well as its practical implications in disease states such as cardiology, oncology, neurology and infectious diseases, among others. It trains pharmacists to decipher genetic tests, translate that information, and make appropriate recommendations for the patient (including collection of DNA samples) interpretation of patient results, and counseling and collaboration with prescribers to help optimize patient medication regimens. Completion of this course will provide the student with a Certificate of Completion from NACDS. The certificate program contains both a self-study (online) module as well as a live component. Furthermore, this elective program is a component of the D'Youville School of Pharmacy Scholars Certificate Program. Please note that because this is a program offered through NACDS, students will be required to pay \$100 out of pocket. Price is subject to change.

Course Types: Natural Sciences

**PMD-803 Infectious Disease V (4 credits)**

This course is the fifth in a seven-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, drug disposition, and pharmacology in order to optimize therapeutic outcomes. Specific topics covered will include the pharmacotherapy of gastrointestinal, nutritional, and skin, bone and joint disorders including gastroesophageal reflux, peptic ulcer, inflammatory bowel disease, nausea, vomiting, diarrhea, constipation, irritable bowel syndrome, pancreatitis, viral hepatitis, obesity, osteoporosis, rheumatoid arthritis, osteoarthritis, gout, acne, atopic dermatitis, and psoriasis.

**PMD-804 Pharmacotherapeutics VII (4 credits)**

This course is the seventh of an eight-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, pharmacology and pharmacotherapy in order to optimize therapeutic outcomes and tolerability for patients. This course will focus on agents used in the management of: toxicological disorders, pain disorders, substance abuse, and disorders specific to pediatric and geriatric populations. This course will also include a discussion on topics related to medication safety.

**PMD-805 Pharm Gastrointestinal V I (4 credits)**

This course is the sixth in a seven-part series in which students will learn to integrate the principles of pathophysiology, medicinal chemistry, drug disposition, and pharmacology in order to optimize therapeutic outcomes. Specific topics covered will include the pharmacotherapy of infectious diseases of the respiratory tract, skin, and soft tissue, tuberculosis, parasitic diseases, urinary tract infections, sexually transmitted diseases, sepsis, fungal infections, and human immunodeficiency virus infection.

**PMD-808 Pharmacotherapeutics VIII (4 credits)**

This course is the eighth of an eight-part series in which students will learn to integrate the principles of pathophysiology and pharmacotherapy, medicinal chemistry, and pharmacology with active learning sessions involving case discussion in order to optimize therapeutic outcomes and tolerability for patients. This course will focus on agents used in the management of: anemia, coagulation disorders, drug-induced hematologic disorders; oncologic diseases including solid tumors and hematologic malignancies such as cancers of the breast, lung, colon, rectum, prostate, ovaries, skin, and lymphoma, leukemia, and myelodysplastic syndromes. Drugs used in the supportive care of cancer patients will also be a focus including those used to manage nausea and vomiting, constipation, and tumor lysis syndrome.

**PMD-810 Population Based Health Care (2 credits)**

Students learn how pharmacists contribute to the delivery of effective, quality health and disease prevention services. Students learn to apply population-specific data, quality assurance strategies, and processes to assure access to rational, safe and cost-effective drug therapy. Students also learn to utilize health-related quality of life measures and decision analyses to assess the health status of individuals in the U.S. healthcare system, and make comparisons to individuals within other global systems. Utilizing the economic and epidemiologic principles learned in class, students critique peer-reviewed public health literature and develop a framework for a group research project that will be completed during the Advanced Pharmacy Practice Experience of the fourth professional year.

**PMD-811 Prof Dev of Student Pharmacist V (1 credits)**

This is the fifth in a six-term sequence of courses. Students participate in team-based learning to foster a deeper understanding of course material, and develop necessary skills through case discussion and other active learning methods.

**PMD-812 Professional Development of a Student Pharmacist IV - Gateway to Clerkship (1 credits)**

This is the final course in the six-term sequence. Students participate in team-based learning to foster a deeper understanding of course material, and develop necessary skills through case discussion and other active learning methods.

**PMD-813 Evidence-Based Medicine II (2 credits)**

Students demonstrate effective communication and organizational skills by preparing, delivering, and evaluating professional seminars.

**PMD-814 Evidence-Based Medicine III (2 credits)**

Students demonstrate effective communication and organizational skills by preparing, delivering, and evaluating professional seminars.

**PMD-815 P3 Community IPPE (1 credits)**

The IPPE program provides the first "real world" experience for students in a variety of practice settings. Students complete 300 rotation hours designed to provide opportunities to apply the knowledge, skills, and behaviors expected of a graduate of the School of Pharmacy. Upon completion of the experiences students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate prepared to enter the APPE sequence. Throughout the rotation series students will be required to complete and document experiences, which may include patient interactions, presentations, and assignments. Additional assignments may be requested at the behest of the assigned preceptor. Evidence of mastery of the school's educational outcomes will be compiled and housed in our electronic learning management system. The IPPE program will build upon student knowledge and skills which are taught through the first two didactic years.

**PMD-817 P3 Institutional IPPE (3 credits)**

The IPPE program provides the first "real world" experience for students in a variety of practice settings. Students complete 300 rotation hours designed to provide opportunities to apply the knowledge, skills, and behaviors expected of a graduate of the School of Pharmacy. Upon completion of the experiences students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate prepared to enter the APPE sequence. Throughout the rotation series students will be required to complete and document experiences, which may include patient interactions, presentations, and assignments. Additional assignments may be requested at the behest of the assigned preceptor. Evidence of mastery of the school's educational outcomes will be compiled and housed in our electronic learning management system. The IPPE program will build upon student knowledge and skills which are taught through the first three didactic years.

**PMD-818 Advanced Therapeutics Elective (2 credits)**

Advanced therapeutics will explore in greater detail the pharmacotherapy of complex and common disease states such as cardiovascular and diabetes care. This course will carry on the foundation created in the Pharmacotherapeutics sequence and integrate concepts across diverse patient groups and treatment goals. For students who are not in the ACHIEVE Program but who are interested in taking the Advanced Therapeutics I elective, please send the course coordinators an email stating your interest. Please note that there are a few eligibility requirements. While the applications will be considered on a first come, first served basis, you must meet the following criteria to be eligible: .

Course Types: 2025SP3; 2024FA; 2023FA; 2022FA; 2021FA; 2021SP; 2020FA; 2020SP; 2019SP; 2018SP; 2017SP

**PMD-819 Intro Residency Practice (2 credits)**

The purpose of this course is to prepare students for applying to PGY-1 residency positions following graduation. Topics to be covered include: benefits and downfalls of completing one or more residency program(s); choosing a program (ASHP accredited vs. non-accredited and other distinguishing features); preparing for the ASHP Residency Showcase; preparing a curriculum vitae; identifying individual student strengths; preparing for on-site interviews; obtaining appropriate letters of reference; and introduction to the residency match program.

**PMD-820 Intro to Residency Practice (2 credits)**

The purpose of this course is to prepare students for applying to PGY-1 residency positions following graduation. Topics to be covered include: benefits and downfalls of completing one or more residency program(s); choosing a program (ASHP accredited vs. non-accredited and other distinguishing features); preparing for the ASHP Residency Showcase; preparing a curriculum vitae; identifying individual student strengths; preparing for on-site interviews; obtaining appropriate letters of reference; and introduction to the residency match program.

**PMD-821 Substance Abuse (2 credits)**

This course would look at the multiple dimensions of substance abuse including pharmacology, treatment, legal aspects, risks in health care workers, concurrent diagnoses (mental health).

**PMD-822 Toxicology (2 credits)**

This class will provide a foundation of knowledge in clinical toxicology, covering toxicology history, poisoning epidemiology, structure and function of poison centers and poison prevention, as well as the toxicity and treatment of numerous specific substances including various prescription and over the counter drugs, household poisons (toxic alcohols, carbon monoxide, caustics, etc.), substances of abuse, and environmental toxins, among others. Throughout the course there will be a focus on the mechanisms and indications for various antidotes and application to various patient cases.

**PMD-823 Disease Prevention Through Lifestyle (2 credits)**

This elective course aims to complement the pharmacotherapeutics sequence of courses for those students interested in learning more about the non-pharmacologic options we recommend alongside pharmacotherapy for disease prevention/management. Many foods and activities exhibit a pharmacologic effect, even though they are not considered pharmacologic agents. Through our frequent interaction with the public in pharmacy settings, pharmacists are often asked about specific foods, supplements or physical activities and how they may help is disease modification and/or weight loss. This course will provide a balanced look at the advantages and disadvantages of the various options available to patients. Note: students will be asked to experiment with temporary changes in diet and physical activity and provide reflections on these experiences.

**PMD-824 Natural Product Therapeutics (2 credits)**

The focus of this course is to study natural remedies and phytomedicinals, which are widely used by the general public as self-selected (OTC) products for therapeutic, quality of life, and prophylactic purposes. The course will focus on the safety, efficacy, herb-food, herb-drug, and herb-herb interactions. The role of pharmacists to assist consumers to select the safest, most proper and useful natural remedies will be considered.

**PMD-825 Emergency Response (2 credits)**

This course will cover topics such as a review of basic first aid, ACLS/PALS topics, pharmacology of emergency meds, interviewing techniques for triage of patients, basic skills (BP, CPR, c-spine stabilization, HR, RR, AED), emergency preparedness topics and possible public health issues. Through this course students will begin to understand emergency medicine algorithms, patient assessment skills/triage in various scenarios, and basic life-saving skills and procedures.

**PMD-826 Geriatric Pharmacotherapy (2 credits)**

The aging of the US population will have a major effect on the future practice of pharmacy. By 2030, an estimated 71 million adults, or approximately 1 in 5 Americans, will be 65 years of age or older. With an estimated 34% of all prescription medications used by older adults, most pharmacists will be expected to care for an older adult at some point in their career. This elective will expand upon the fundamental geriatric concepts presented throughout the curriculum as well as introduce consultant pharmacy, the practice within the profession of pharmacy that has its roots in the provision of pharmacy services to nursing facilities (NFs)—and other long-term care (LTC) environments. Instruction will include guest lectures, formative quizzes, summative exams, case analyses, and a team assignment.

**PMD-827 Interprofessional Collaborative Practice V: Advanced Interprofessional Practice (0.5 credits)**

This is part 1 of a 3 part elective series to provide a structured environment to allow students to complete a clinical research project with the supervision of a faculty member. Each part of the elective will have different objectives to keep the student on track with the ultimate goal of submitting an abstract or writing a paper by the end of the 3 part elective. A topic can be self-chosen or assigned. The focus of the Fall elective will entail conducting a literature review and creating a research proposal that will be submitted to the applicable institutional review board (IRB). It is not required for students to take the Spring elective or APPE elective if they do not wish to complete the research project after the Fall elective. However, this is a sequential series so a student must start with the Fall semester elective.

**PMD-828 Interprofessional Collaborative Practice VI: Advanced Interprofessional Practice (0.5 credits)**

Interprofessional Collaborative Practice VI: Advanced Interprofessional Practice is the sixth offering in the Interprofessional Collaborative Practice course series in the School of Pharmacy. The backbone of this course series centers upon our partnership with the Indiana University TEACH program which "enables students to practice critically important, core interprofessional practice competencies while working on person- and community-centered teams to improve health and well-being." In the first year of the series, students are introduced to the following interprofessional competencies: roles and responsibilities, communication, teams and teamwork, and value and ethics and complete authentic activities with prescribers, other healthcare professionals, residents, and students focused on roles and responsibilities. In the second year of the series, the competencies introduced during the first year of the course are re-enforced with focus shifting to teams, teamwork, and communication and a chance to practice these concepts in simulations and authentic activities with prescribers, other healthcare professionals, residents, and students. In the third year of the series, students focus shifts to interprofessional value and ethics and practice of these interprofessional competencies through simulation and authentic activities with prescribers, other healthcare professionals, residents, and students. This course, the second in the third year of the series encourages implementation of roles and responsibilities, teams and teamwork, values and ethics, and communication through simulation and participation in authentic experiences with prescribers.

**PMD-829 Spanish for Pharmacy Practitioners (2 credits)**

This course is a basic course in Spanish geared to dispensing pharmacy. It will include basic anatomy and disease state terminology, medication counseling, directions for medication use, and patient history terms.

**PMD-830 Nuclear Pharmacy (3 credits)**

This elective introduces students to the principles and practice of nuclear medicine and the role of the nuclear pharmacist. The student will understand the basic concepts of nuclear pharmacy and the quality control involved in producing a radiopharmaceutical. The elective will review many clinical images of radiopharmaceutical uptake in organ systems thus diagnosing disease states in patients. The course concludes by spending 1 week at a nuclear pharmacy observing the practices and procedures reviewed during the semester.

**PMD-831 Ethics in Pharmacy Practice (2 credits)**

This elective course prepares students to approach ethical dilemmas objectively with a thorough understanding of professional ethical responsibility. This course assists students to: distinguish ethical from other kinds of issues in professional practice, identify the ethically relevant features of a case, identify the ethical options open to a pharmacist faced with an ethical problem, provide justification for the best options, consider counter-arguments for one's position, practice the act of responding personally to an ethical problem in clinical practice through 1:1 interaction, and enhance commitment to promoting the dignity of others. Practicing pharmacists are called upon to resolve ethical conflicts; this is unavoidable. Whether dramatic or relatively trivial, the choices made are important. Also, as practice evolves toward increasing application of the principles and methods of pharmaceutical care acumen and skill in management of ethical issues is crucial.

**PMD-832 Basic Pharmaceutical Research II (3 credits)****PMD-833 Integrated Compound & Practice (2 credits)**

Students will be assigned to assist faculty in the laboratory component of the integrated compounding and practice course (PMD 709). Students enrolled in this course are also expected to maintain confidentiality of grades, evaluations, and other course materials. At the end of the semester, the students' performance will be evaluated by the course coordinator. The time commitment would include the 3 hr. lab session, along with a separate recitation time to go over grading of previous work and prepare for the upcoming lab week.

**PMD-834 Independent Clinical Research (2 credits)****PMD-836 Academic Practice in Patient Care Skills (2 credits)**

The goal of this course is to give the students in-depth understanding of the science and forces behind the discovery of novel drugs and treatment approaches. The lectures will cover all stages of the discovery and development process starting with the basic science, through the specific design of clinical trials and potential clinical applications. The lectures will be based on the analysis of primary literature in a case study format. Major breakthroughs and standard-of-care changing paradigms will be comprehensively discussed and analyzed. Student attendance and participation is a critical part of this course. Articles to be discussed during the class will be sent to the students prior to the class meeting session by a week.

**PMD-837 Research Elective (3 credits)**

This elective will introduce the student to the field of pharmaceutical research, both academic and industrial. It will begin with a series of up to four lectures, two covering the drug discovery and development process and up to two lectures given by basic research faculty who will discuss their own research interests. The remainder of the elective will be taught in the laboratory where the student will be exposed to research techniques that match their interests (e.g., chemistry, pharmacology and pharmaceuticals or molecular biology). This is a required 2 part/2 semester course offering.

**PMD-838 Preparing for Management of Pharmacy Practice (2 credits)**

This course is a course to expose the student to basic key principles of managing practice for the staff pharmacist interested in preparing for a career in pharmacy management. Fiscal issues ranging from staffing, purchasing contracts and inventory to HR factors (dealing with difficult employees, establishing and cultivating core competency in staff, emotional intelligence for managers, and unions in healthcare) and meeting and preparing for the necessary accreditation standards for a site survey by Joint Commission, ASHP residency training and CMS. This course may include guest speakers from these organizations.

**PMD-839 Innovations in Community Pharm (2 credits)**

The speaker series introduces students to a variety of community pharmacy practice opportunities, assists community-oriented students seeking career guidance, motivates students to take an active approach to career planning, and encourage students seeking post-graduate community or ambulatory pharmacy residencies. The course will expose P2 and P3 student to influential community pharmacy managers, pharmacists, and regulators who exhibit one of more of the following qualities: Excellence through diversity; leadership through advocacy; pharmacist-conscious management strategies; evolution of practice models; innovation in patient-centered care; protection of the profession; commitment to continuous quality improvement in medication safety and delivery of care; and dedication to the ongoing education and development of student pharmacist and recent graduates. Invited guest lecturers lend perspective about their relative roles in pharmacy practice, the impact of their pharmacy in their communities, and additional topics as related to their qualities as listed above. Guest lecturers present in pairs or triplets (i.e. pharmacy manager, staff pharmacist, and pharmacy resident) so students can witness the roles of each position, as well as learn the qualities and skills that each supervisor seeks in their subordinates during interviews for hire, annual reviews, and consideration for promotion.

**PMD-840 Advanced Hospital Pharmacy Practice (2 credits)****PMD-842 Advanced Motivational Interviewing (2 credits)**

This course is designed to introduce students to the disparity that exists in healthcare both here in the states and abroad, and get students involved in projects that make a difference for underserved communities. This elective consists of both lectures and hands-on experiences with populations in need. Students will participate in a minimum of three volunteer experiences within the Buffalo area, and work on one project for an international organization. While class hours are listed as 1-3 PM on Tuesdays, many of the volunteer opportunities will fall outside those hours. Students are expected to participate in a minimum of 3 volunteer experiences in the community, and type a 1-page a journal entry/ reflection for each of these experiences.

**PMD-844 Global Health in Pharmacy (2 credits)**

Global Health in Pharmacy is a course that is designed to expose the pharmacy students to global health issues and differences between different global health systems. Additionally, students will learn about considerations in treating communicable and non-communicable diseases in low income countries, pharmacist roles/servant leadership opportunities in different countries, regulations regarding medication use, and acquisition outside of the USA, and opportunities that exist for pharmacists in global health. Some classes will be taught in an interdisciplinary setting with students from nursing and public health programs. In addition, students will be offered the opportunity to attend a trip to Buenos Aires, Argentina in the summer following the spring semester for an additional course credit.

**PMD-845 Nuclear Pharmacy (3 credits)**

This elective introduces students to the principles and practice of nuclear medicine and the role of the pharmacist.



**PMD-846 Advances in Drug Discovery and Development (2 credits)**

The goal of this course is to give the students in-depth understanding of the science and forces behind the discovery of novel drugs and treatment approaches. The lectures will cover all stages of the discovery and development process starting with the basic science, through the specific design of clinical trials and potential clinical applications. The lectures will be based on the analysis of primary literature in a case study format. Major breakthroughs and standard-of-care changing paradigms will be comprehensively discussed and analyzed. Student attendance and participation is a critical part of this course. Articles to be discussed during the class will be sent to the students prior to the class meeting session by a week.

**PMD-847 Advocacy & Advanced Topics Women's Hlth (2 credits)**

This elective will explore in greater detail the pharmacotherapy in women across the lifespan. This course will prepare pharmacy students to provide optimal care of women at all ages. This course will also provide students with a foundational knowledge in women's health policy, research and advocacy. Pharmacotherapeutic topics may include: infertility, infectious disease in women, specific topics surrounding use of contraception, use of hormone therapy and bioidenticals, pregnancy, lactation and toxicities, the postpartum period, conditions associated with pregnancy, and cancers specific to women. Topics covered in the area of policy and advocacy may include: access and barriers to care, equality in health care, inclusion of women and minorities in research, and gender roles.

**PMD-848 Critical Care Pharmacotherapeutics (2 credits)**

This elective course would focus on the unique considerations for a clinical pharmacist taking care of critically ill patient. It would prepare the student to understand basic principles of physiology, pharmacokinetics, and pharmacotherapy essential to the management of critically ill patients. Topics to be covered include: acid/base, hemodynamic parameters, pain/sedation/delirium, cardiopulmonary arrest, shock states, stress ulcer prophylaxis, renal replacement therapy, cardiovascular emergencies.

**PMD-849 P3 IPPE Practice (0 credits)**

The P3 Practice IPPE Rotation provides the opportunity for the student to test knowledge and skills they acquired through classes and previous pharmacy practice experiences through application with a clinical pharmacist preceptor. Under the supervision of their preceptors, students will be introduced to communicating with patients, care givers, providers, and other health professionals as well as research methods and process.

**PMD-850 Practice IPPE (1 credits)**

The focus of this course is to study herbal preparations and other phytomedicinals which are widely used by the general public as self-selected OTC products for therapeutic, preventive or prophylactic purposes. The course will be methodically classified by organ systems (e.g. nervous system, cardiovascular system, digestive system) and its relevant field of application (e.g. depression, anxiety and sleep disorders; congestive heart failure, arteriosclerosis; peptic ulcers, constipation). Emphasis will be placed on herbal constituents and products whose safety and efficacy are based not just on tradition but also on modern scientific testing. The course will further give an introduction into aspects related to safety, herb-d, herb-drug, herb-herb interactions, and quality and efficacy of herbal medicinal products. The role of pharmacists to assist consumers to select the safest, most proper and useful natural remedies will also be considered.

**PMD-851 P3 IPPE Long Term Care (1 credits)****PMD-852 Long Term Care IPPE (1 credits)****PMD-853 Compounding Bootcamp (1 credits)****PMD-859 Topics in Pharmacy V Assessment (0 credits)****PMD-860 Topics in Pharmacy VI (0 credits)****PMD-861 Elective US IPPE (0 credits)****PMD-862 Advanced Compounding (2 credits)**

This course will focus on applied concepts in contemporary pharmaceutical compounding/product development and will have both laboratory and classroom components. The laboratory component will deal with extemporaneous compounding of dosage forms such as gels, troches, lollipops, lip balm etc that have not been covered in the basic compounding course. The classroom component will include guest lectures, in-class presentations / discussions on topics such as beyond-use dating of compounded preparations, quality control, compounding pharmacy management and the related area of pharmaceutical product development. This will prepare the pharmacy student to recognize the value and importance of compounded formulations as well as the distinction from manufacturing. Note: This course deals with material and concepts beyond the scope of the Part III compounding Exam as required by the New York State Board of Pharmacy and is not intended as a review course for the aforementioned licensing exam.

**PMD-863 Research Methods and Biostatistics (2 credits)**

The course will cover the foundations of healthcare research. These include: study design, sampling, measuring patients outcomes, in addition to data collection and processing in healthcare research. It will also cover the basic concepts in bio-statistical analyses. The course will carry on the foundation created in the "Biostatistics and Literature Evaluation" Course, but will also offer a hands-on experience to students in data manipulation and data analysis that can be typically used in a healthcare setting.

**PMD-864 Current Topic in Drug Discovery & Development (2 credits)****PMD-865 APhA The Pharmacist & Patient-Centered Diabetes Care (2 credits)**

This hybrid elective is a certificate training program offered in conjunction with the American Pharmacists Association and is an educational experience designed to equip pharmacists with the knowledge, skills, and confidence needed to provide effective, evidence-based diabetes care. The program provides comprehensive instruction in current diabetes concepts and standards of care and incorporates case studies and hands-on skills training focused on the situations most likely to be encountered—as well as the services most needed—in community and ambulatory care practice settings. Participants will gain experience evaluating and adjusting drug therapy regimens for patients with type 1 and type 2 diabetes, counseling patients about lifestyle interventions, analyzing and interpreting self-monitoring of blood glucose results, and assessing the overall health status of patients to identify needed monitoring and interventions. Completion of this course will provide the student with a Certificate of Completion from APhA. The certificate program contains both self-study (online) modules as well as a live component. Furthermore, this elective program is a component of the D'Youville University School of Pharmacy ARCHIVE program.

**PMD-866 Pharmacy Internship (0 credits)**

The goal of this course is to expose the student to the complexity of US pharmacy practice and be able to identify key aspects and future directions of US pharmacy practice, this should assist them in the appreciation of the role of pharmacists as healthcare providers and advocates for improving the health of patients in their communities and across the US. Key competencies to be addressed include: US burden of disease, medication use management, social and economic health determinants, population resources and environment, pharmaceutical care in low resource settings, and contemporary pharmacy practice.

**PMD-867 Advanced Self-Care (2 credits)**

This course will provide the opportunity to learn more about the role of the pharmacist in the management of self-limiting illnesses as well as preventative and adjunctive self-care. There will be a focus on the most commonly encountered self-care topics in practice and the evaluation, recommendation, assessment and monitoring of self-care within complex patient cases. Students will have the opportunity to develop these skills across a variety of contexts including informal and formal patient case presentations.

**PMD-868 Introduction to Managed Care Pharmacy (2 credits)**

This course is a standalone elective course in which students will learn the principles of managed care pharmacy and the roles and responsibilities of a managed care pharmacist. Specific topics covered will include types of managed care organizations, individual and population health management, health care disparities, purpose and types of quality measures, formulary and benefit management, specialty pharmacy, disease state review policies and procedures, clinical program development and implementation, and potential career paths.

**PMD-869 Global Health & International Travel (3 credits)**

Global Health in Pharmacy is a course that is designed to expose the pharmacy students to global health issues and differences between different global health systems. Additionally, students will learn about considerations in treating communicable and non-communicable diseases in low income countries, pharmacist roles/servant leadership opportunities in different countries, regulations regarding medication use, and acquisition outside of the USA, and opportunities that exist for pharmacists in global health. Some classes will be taught in an interdisciplinary setting with students from nursing and public health programs. In addition, students will be offered the opportunity to attend a trip to Buenos Aires, Argentina in the summer following the spring semester for an additional course credit.

**PMD-871 Mgmt & Leadership Planning & Operations (2 credits)**

This online elective is part of a three elective sequence required for the Pharmacy Manager Concentration (PMC). It can be taken after acceptance into the concentration or by permission from the instructor. The course can be taken in any sequence vis-à-vis the other two online PMC elective courses for the PMC. Each weekly two-hour online lesson will consist of materials on the Canvas® learning management system. These materials include Panopto® delivered podcasts that cover management/leadership, planning and operations topics. Each weekly Panopto® delivered podcast will have five (5) embedded quiz questions. And each week, individual students will also be tasked to answer more challenging questions as part of a weekly (asynchronous) online discussion. Tweets will be employed to clarify student understanding of the more difficult issues. The "wisdom" of experienced pharmacy managers will be tapped into from a variety of pharmacy practice settings using videos, tables, and sidebars with concise tips; and, listings of additional resources. Students will be required to complete a six-page term paper on an approved topic. And, a midterm examination and a final examination will need to be taken on Examssoft® (using Examity® online proctoring).

**PMD-872 Off-Label Use of Medications (1 credits)**

This elective is part of the elective sequence required for the ACHIEVE Program. It can be taken after acceptance into the concentration or by permission from the instructor. This is an elective course in which students will learn the rationale for, extent of, controversies surrounding, various stakeholder positions (medical practitioner, industry, pharmacy), and legal perspectives associated with off-label prescribing and use of FDA approved medications. The course is divided into two major sections, didactic and student participation/presentation. The didactic portion consists of faculty led presentations of key concepts associated with the basis for off-label drug therapies including the fundamental mechanisms underlying disease and their effect on specific organ systems; pleotropic pharmacologic mechanisms of action; the relationship between mechanism(s) of disease and drug action; and the balance between off-label therapy and potential risks. The didactic section will also include presentations on common therapeutic areas for off-label prescribing (oncology, pain management, and pediatrics/intensive care) focusing on these key concepts. The student participation/presentation section consists of student led discussions on specific off-label medication use topics facilitated by course faculty. PRE-REGISTRATION will be notified ahead if spot attained For students who are not in the ACHIEVE Program but who are interested in taking the Off-Label Use of Medications elective, please send the course coordinators an email stating your interest. Please note that there are a few eligibility requirements. While the applications will be considered on a first come, first served basis, you must meet the following criteria to be eligible: .

Course Types: 2022FA; 2021FA

**PMD-873 Finance Risk Mgmt and HR (2 credits)**

This online elective is part of a three elective sequence required for the Pharmacy Manager Concentration (PMC). It can be taken after acceptance into the concentration or by permission from the instructor. The course can be taken in any sequence vis-à-vis the other two online PMC elective courses for the PMC. Each weekly two-hour online lesson will consist of materials on the Canvas® learning management system. These materials include Panopto® delivered podcasts that cover finance, risk management, and human resources topics. Each weekly Panopto® delivered podcast will have five (5) embedded quiz questions. And each week, individual students will also be tasked to answer more challenging questions as part of a weekly (asynchronous) online discussion. Tweets will be employed to clarify student understanding of the more difficult issues. The "wisdom" of experienced pharmacy managers will be tapped into from a variety of pharmacy practice settings using videos, tables, and sidebars with concise tips; and, listings of additional resources. Students will be required to complete a six-page term paper on an approved topic. And, a midterm examination and a final examination will need to be taken on Examsoft® (using Examity® online proctoring).

**PMD-875 Prof Effectiveness, Entr, Mktg and Promo (2 credits)**

This online elective is part of a three elective sequence required for the Pharmacy Manager Concentration (PMC). It can be taken after acceptance into the concentration or by permission from the instructor. The course can be taken in any sequence vis-à-vis the other two online PMC elective courses for the PMC. Each weekly two-hour online lesson will be consist of materials on the Canvas® learning management system. These materials include Panopto® delivered podcasts that cover professional effectiveness, entrepreneurship, marketing and promotion topics. Each weekly Panopto® delivered podcast will have five (5) embedded quiz questions. And each week, individual students will be tasked to answer more challenging questions as part of a weekly (asynchronous) online discussion. Tweets will be employed to clarify student understanding of the more difficult issues. The "wisdom" of experienced pharmacy managers will be tapped into from a variety of pharmacy practice settings using videos, tables, and sidebars with concise tips; and, listings of additional resources. Students will be required to complete a six-page term paper on an approved topic. And, a midterm examination and a final examination will need to be taken on Examsoft® (using Examity® online proctoring).

**PMD-877 MTM IPPE (1 credits)**

Purpose While partaking in the Medication Therapy Management Pharmacy IPPE Rotation the student will gain experience in providing MTM services which is recognized as a growing area in all areas of pharmacy practice. Students will be the learning the fundamentals of the MTM process in both training that involves simulated cases with the potential for real world integration. Students will receive the APhA MTM Training Certificate in the P2 year and successfully complete the required 5 post cases during this IPPE. Goals & Objectives The goal of this IPPE course is to expose the student to the expanding role Pharmacists play in pharmaceutical care with emphasis on the patient care process. The premise and focus will be on addressing Drug Related Problems (DRPS) with documentation of efforts via the MTM platform.

**PMD-878 MTM IPPE (1 credits)**

Purpose While partaking in the Medication Therapy Management Pharmacy IPPE Rotation the student will gain experience in providing MTM services which is recognized as a growing area in all areas of pharmacy practice. Students will be the learning the fundamentals of the MTM process in both training that involves simulated cases with the potential for real world integration. Students will receive the APhA MTM Training Certificate in the P2 year and successfully complete the required 5 post cases during this IPPE. Goals & Objectives The goal of this IPPE course is to expose the student to the expanding role Pharmacists play in pharmaceutical care with emphasis on the patient care process. The premise and focus will be on addressing Drug Related Problems (DRPS) with documentation of efforts via the MTM platform.

**PMD-881 Principles of Teaching and Learning (1 credits)**

This elective is part of the elective sequence required for the ACHIEVE Program. It can be taken after acceptance into the concentration or by permission from the instructor. This elective course provides students instruction on learning theory and best teaching practices. Participants will develop knowledge of teaching pedagogy, writing learning objectives, delivering effective presentations, writing examination questions, and formulating grading rubrics. Through this course, participants will develop knowledge, skills, and attitudes which will enhance their performance as a clinical preceptor, mentor, patient and health professional educator, and junior faculty member. Participants will have the opportunity to complete one

Course Types: Natural Sciences

**PMD-882 Applied Statistics for Pharmacists (3 credits)**

This elective 3-credit course is intended as an introduction to statistics and practical applications, not abstract theory. Students learn to describe data and organization strategies for categorizing and classifying data to make it more usable, statistical concepts including probability distributions and hypothesis testing, when to apply different methods for statistical analysis, interpretation of P-values and how to draw conclusions from them. Emphasis will be placed on the most common parametric statistical tests; t-tests, analysis of variance and post hoc procedures, measures of repeatability and reproducibility, chi square tests, correlation, and linear regression. Students will work with numerous examples using IBM SPSS, Inc. statistical software for data manipulation and run basic statistical analyses in respective didactic sessions. This software is generally considered user friendly and easy to teach to students when conducting data management and statistical procedures. This elective is part of the elective sequence required for the ACHIEVE Program. It can be taken after acceptance into the concentration or by permission from the instructor. This elective course provides students with knowledge of leadership and research. A variety of activities and workshops will help students practice and expand upon practical leadership skills necessary for professional success. Students will also learn about the different types of study designs, sources and methods of data collection, and how to analyze data using statistical software. PRE-REGISTRATION will be notified ahead if spot attained

Course Types: Lifelong Learning; Natural Sciences

**PMD-883 ACHIEVE Independent Study (1 credits)**

The ACHIEVE Independent Study provides an opportunity for students to test the knowledge and skills they acquired in their didactic courses and previous pharmacy practice experiences through application with their ACHIEVE mentor. Throughout this rotation, students will gain experience assessing, implementing, and monitoring care plans for multiple different disease states and patient populations. In addition, students will learn how to appropriately perform a patient interview, medication reconciliation, and discharge counseling as they relate to their mentor's setting. By doing so, students will reinforce their skills by communicating with patients, caregivers, providers, and other healthcare professionals. Upon completion of these experiences, students will have provided direct care to patients under the supervision of a qualified preceptor and demonstrated their mastery of the educational outcomes and competencies expected of a graduate.

**PMD-884 Postgraduate Residency Prep Course (2 credits)**

This elective is part of the elective sequence required for the ACHIEVE Program. It can be taken after acceptance into the concentration or by permission from the instructor. This interactive, simulation course will target students in their last didactic year of coursework, prior to their first year of clinical rotations. This elective will serve to assess students' competencies in interprofessional teamwork, communication, and clinical skills, as well as profession-specific competencies to assess readiness for experiential rotation coursework and prepare them for graduation.

Course Types: Critical Analysis; Ethical Reasoning and Act; Lifelong Learning; Natural Sciences; Oral Communication; Problem-Solving; Scientific Reasoning; Teamwork; Written Communication

**PMD-887 Developing Pediatric Pharmacy Knowledge and Outpatient Skills (3 credits)**

The purpose of this elective is to support students' development of pediatric pharmacy knowledge and skills with a focus on outpatient care. All children and young people should have access to pediatric specific pharmaceutical care that is equitable and patient-centered across the entire continuum of their care. As part of the healthcare ecosystem, pharmacists should strive to improve pediatric health outcomes and reduce pediatric medication errors. This course introduces the role of pharmacists in providing care to pediatric patients in the community and will explore medication-related needs and barriers of children, young people, and their adult caregivers. It will delve into pediatric specific disease states and give students an opportunity to apply their knowledge and skills by using the pharmacist patient care process.

**PMD-888 Aromatherapy, Hydrosols, But Plants Are So Much More (2 credits)**

The purpose of this elective is to expose students to the diverse role whole plants can play in improving health and wellbeing. As society continues to turn to alternative health approaches it is imperative health care professionals are aware of various options patients may turn to. The course will explore the value of using an entire plant compared to buying over the counter plant supplements. It will focus on aromatherapy and hydrosols, but will also compare this to teas, tinctures, salves, etc. The course will start out with an introduction to aromatherapy and herbalism including definitions/terminology. It will then delve into plants in more detail and what each plant can offer, with a focus on plants used for aromatherapy and hydrosols.

**PMD-897 Remediation (0 credits)**

This course will serve as remediation for P3 Fall Course Remediation

**PMD-898 Remediation (0 credits)**

This course will serve as remediation for P3 Spring Course Remediation

**PMD-899 External Pharmacy Elective (1-6 credits)**

This course number will be used to award pharmacy credit for didactic elective courses from sources outside of D'Youville to award pharmacy credit.

**PMD-901 Advanced Community Pharmacy (6 credits)****PMD-902 Ambulatory Care Rotation (6 credits)**

The Advanced Pharmacy Practice Experience provides practice opportunities that require students to assume responsibility for the outcomes of drug therapy. Students develop mastery of the educational outcomes during five required and two elective rotations. Required rotations include acute care, ambulatory care, advanced institutional pharmacy, advanced community pharmacy and a health and wellness project. Students also choose two elective rotations covering a variety of pharmacy settings, such as long term care, nuclear pharmacy, home infusion, geriatrics, pediatrics, managed care, oncology and psychiatric pharmacy.

**PMD-903 Institutional Clinical Rotation (6 credits)****PMD-904 Institutional Operations Rotation (6 credits)**

The Advanced Pharmacy Practice Experience provides practice opportunities that require students to assume responsibility for the outcomes of drug therapy. Students develop mastery of the educational outcomes during five required and two elective rotations. Required rotations include acute care, ambulatory care, advanced institutional pharmacy, advanced community pharmacy and a health and wellness project. Students also choose two elective rotations covering a variety of pharmacy settings, such as long term care, nuclear pharmacy, home infusion, geriatrics, pediatrics, managed care, oncology and psychiatric pharmacy.

**PMD-905 APPE Elective A (6 credits)**

The Advanced Pharmacy Practice Experience provides practice opportunities that require students to assume responsibility for the outcomes of drug therapy. Students develop mastery of the educational outcomes during five required and two elective rotations. Required rotations include acute care, ambulatory care, advanced institutional pharmacy, advanced community pharmacy and a health and wellness project. Students also choose two elective rotations covering a variety of pharmacy settings, such as long term care, nuclear pharmacy, home infusion, geriatrics, pediatrics, managed care, oncology and psychiatric pharmacy.

**PMD-906 APPE Elective B (6 credits)**

The Advanced Pharmacy Practice Experience provides practice opportunities that require students to assume responsibility for the outcomes of drug therapy. Students develop mastery of the educational outcomes during five required and two elective rotations. Required rotations include acute care, ambulatory care, advanced institutional pharmacy, advanced community pharmacy and a health and wellness project. Students also choose two elective rotations covering a variety of pharmacy settings, such as long term care, nuclear pharmacy, home infusion, geriatrics, pediatrics, managed care, oncology and psychiatric pharmacy.

**PMD-909 International APPE (0 credits)**

The International APPE rotation experiences expose students to the complexity of global health issues and help them to be able to identify sources of information concerning global health topics. This experience should assist them in the appreciation of the role of healthcare providers as advocates for improving the health of patients in their communities and globally.

Course Types: Study Abroad

**PMD-911 Pharmacy Board Exam Preparation & Practice (0 credits)**

Pharmacy Board Exam Preparation & Practice is a course designed to assist Pharmacy students in preparing for board examinations required for licensure and entry into the professional practice of pharmacy. Students must register for this course once during the 4th year (P4) of the PharmD program.