Harrison College of Pharmacy

LEIGH ANN ROSS, ***Dean***
KIMBERLY BRAXTON-LLOYD, ***Associate Dean for Clinical Affairs and Outreach***
KAREN MARLOWE, ***Associate Dean for Academic Programs***
TIMOTHY MOORE, ***Associate Dean for Research***
DANIEL SURRY, ***Associate Dean for Accreditation***
EMILY MCCOY, ***Assistant Dean for Mobile***
LORI HORNSBY , ***Acting Assistant Dean for Student Experience***

THE AUBURN Doctor of Pharmacy (PharmD) degree program is a four-year course of study that requires the completion of the pre-pharmacy curriculum prior to enrollment. The curriculum is designed to facilitate the development of those abilities necessary for entry-level practitioners in various practice settings. Consistent with accreditation standards and guidelines, the College's fully integrated curriculum provides an appropriate balance of course work in the following areas: biomedical sciences (basic and clinical); pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; pharmacy practice; and pharmacy practice experience. The goal of the curriculum is to prepare students who are ready to enter practice at the time of graduation and are life-long learners. To help accomplish this, the curriculum involves students in sequenced patient care responsibilities beginning in the first professional year. Students also participate as active, self-directed learners in interprofessional teaching models. Team-based learning is extensively utilized.

Admission Requirements

Course requirements for admission to the James Harrison College of Pharmacy may be satisfied by completing the Pre-Professional Curricula in either the College of Sciences and Mathematics or the College of Human Sciences (Nutrition Sciences Option). Any or all of these requirements may also be met by transfer of appropriate credit from other institutions.

Admission is limited and is contingent upon available facilities and faculty. To be considered for admission the applicant must have a satisfactory academic record. A grade of D in any prerequisite course will not be accepted. Students are matriculated into the James Harrison College of Pharmacy only during Fall Semester. Students may apply for admission prior to completion of all pre-requisites; however, admission will be contingent on completion of all pre-pharmacy course work. All pre-requisites must be completed by the end of the summer term prior to the start of the professional program.

Applicants must apply to the Harrison College of Pharmacy through the Pharmacy College Application Service (PharmCAS). The Harrison College of Pharmacy admits students using a rolling admissions process and student applications are prioritized in the order in which they are received. The final deadline for receipt of all application materials is posted on the PharmCAS Website. Students who are successful in meeting the college’s initial screening criteria are required to complete an in-person or virtual interview in order to be further considered for admission.

The Harrison College of Pharmacy’s Doctor of Pharmacy Program admits students to two campuses: the main Auburn Campus and the Mobile Campus located at the University of South Alabama. Students may express a preference for a specific campus.

Prospective students may obtain application information, which further outlines policies and procedures, from the College’s website at www.pharmacy.auburn.edu or by contacting the Division of Student Experience. Applications through PharmCAS are submitted online at http://www.pharmcas.org/.

The Harrison College of Pharmacy offers an Early Admission Program to highly qualified individuals admitted as undergraduate students to Auburn University or the University of South Alabama. Further information may be obtained from the College's Website or Division of Student Experience.

Prerequisite Requirements

Prerequisite requirements for the Doctor of Pharmacy Program [1]

Options for completion of the prerequisite academic work required for entry into the Harrison College of Pharmacy’s (HCOP) Doctor of Pharmacy (Pharm.D.) program includes:

1. Completion of the first two years of the curriculum of the Drug and Biopharmaceutical Sciences (DBPS program) or
2. A minimum of **62-66 semester hours** distributed as follows from any other major.

Humanities and Social Sciences (24 hours)*

- English Composition (6 hours)
- Additional Courses (18 hours) – Courses that are acceptable for meeting this requirement include, but are not limited to, History, Literature, Fine Arts, Philosophy, Religion, Foreign Languages, Ethics, Speech, Communications, and Additional Social Sciences.

Science and Math Core (38-42 hours)

- General Biology (4 hours)
- General Chemistry with Laboratory (8 hours)
- Organic Chemistry with Laboratory (8 hours)
- Human Anatomy and Physiology (8 hours) OR Upper Division Physiology (4 hours)**
- Microbiology (4 hours)
- Calculus (4 hours)
- Statistics (3 hours)
- Biochemistry (3 hours)

***Applicants that will enter the HCOP with a baccalaureate degree are required to complete English Composition (6 hours), but may be waived from additional Humanities and Social Science requirements.**

****Acceptable courses include Mammalian, Vertebrate, Human, or Animal Physiology.**

Doctor of Pharmacy Curriculum

First Year

Fall	Hours	Spring	Hours
PYPD 9000 Orientation	1	PYPD 9220 ILE III	6
PYPD 9200 ILE I	6	PYPD 9230 ILE IV	6
PYPD 9210 ILE II	6	PYPD 9330 Longitudinal Experience II	3
PYPD 9320 Longitudinal Experience I	3	PYPD 9410 Workshop II	1
PYPD 9400 Workshop I	1		

Second Year

Fall	Hours	Spring	Hours
PYPD 9240 ILE V	6	PYPD 9260 ILE VII	6
PYPD 9250 ILE VI	6	PYPD 9270 ILE VIII	6
PYPD 9340 Longitudinal Experience III	3	PYPD 9350 Longitudinal Experience IV	3
PYPD 9420 Workshop III	1	PYPD 9430 Workshop IV	1
PYPD 9160 Community Pharmacy IPPE	2	PYPD 9080 Population Health IPPE	2
PYPD 9190 Health and Wellness IPPE	1	PROFESSIONAL ELECTIVES	0-2
PROFESSIONAL ELECTIVES	0-2		

Third Year

Fall	Hours	Spring	Hours
PYPD 9280 ILE IX	6	PYPD 9300 ILE XI	6
PYPD 9290 ILE X	6	PYPD 9310 ILE XII	6
PYPD 9360 Longitudinal Experience V	3	PYPD 9370 Longitudinal Experience VI	3
PYPD 9440 Workshop V	1	PYPD 9450 Workshop VI	1

PYPD 9170 Health System Pharmacy IPPE	2	PROFESSIONAL ELECTIVES	0-2
PYPD 9180 Clinical Pharmacy IPPE	1		
PROFESSIONAL ELECTIVES	0-2		

Students are required to complete 6 hours of professional elective courses in the second and third professional years.

Fourth Year

PYPD 9600 Advanced Pharmacy Practice Experiences 40 total hours

(students complete 40 weeks of Practice Experiences during Summer Term, Fall Semester and Spring Semester, plus a Summative Experience Sequence.)

PYPD 9700 Summative Experience I 3

PYPD 9800 Summative Experience II 3

TOTAL PROGRAM HOURS = 157

Academic Performance Standards

The implementation of all guidelines will be in addition to those existing policies and standards of the University.

To remain in good standing, students are required to meet the requirements set out in Harrison College of Pharmacy Academic Guidelines. GPAs will be calculated only from professional course work, which is defined as core pharmacy courses approved by the faculty and listed in the Doctor of Pharmacy curriculum.

Harrison College of Pharmacy students with semester or cumulative GPAs below 2.25, or who receive Ds and Fs in required courses, may be dismissed from the Harrison College of Pharmacy or required to undergo a remedial plan of study as directed by the Committee on Academic Requirements, and Professionalism. Policies concerning academic progression, probation, and dismissal are specified in the Harrison College of Pharmacy's Standards and Policies. Copies of Standards and Policies may be obtained from the Harrison College of Pharmacy's Office of Academic Programs or from the College's website.

Students must observe pre-requisites and co-requisites stated in the current *Auburn University Bulletin*.

Notes

- Students are required to file an application with the Alabama State Board of Pharmacy for registration as an intern at the time they are enrolled in the James Harrison College of Pharmacy. Information and intern registration forms may be obtained from the Alabama State Board of Pharmacy at www.albop.com. Students must maintain a valid Alabama Internship License as a condition of continued enrollment in the James Harrison College of Pharmacy.
- Upon entering the Harrison College of Pharmacy, and at the beginning of each academic year, students are required to furnish documentation of professional liability insurance, current CPR and First Aid certification, personal medical insurance, and up-to-date immunizations. Students who fail to maintain documentation will be dis-enrolled and will not be allowed to re-enroll until current documentation has been provided.
- Students are required to undergo criminal background checks prior to matriculation in the Harrison College of Pharmacy which are updated annually.
- Pharmacy students are required to complete specified Professional Development activities.
- Students in the Doctor of Pharmacy program are required to own a laptop computer that meets the College's specifications. Questions about computer specifications should be directed to the College's Office of Information Technology.
- Students are required to adhere to all of the Harrison College of Pharmacy's codes, policies, and professional requirements. The college will take disciplinary action against those students who violate such codes, policies, and professional requirements.
- Students will be required to periodically take examinations and other assessments to assess their ability to integrate the knowledge, skills, and attitudes learned to date. Some of these exams or assessments may affect the ability to progress within the program independent of their grades or GPA. Students may be required to complete remedial work should their performance be unsatisfactory.
- Consistent with the policies of Auburn University, The Harrison College of Pharmacy reserves the right to make changes at any time in its academic programs, codes, policies, and professional requirements.

- Students will be notified of their site assignments for Introductory and Advanced Practice Experiences at the earliest feasible time, to enable them to make housing arrangements. Rotation sites are located throughout Alabama, western Georgia, the Mississippi Gulf Coast, and the Florida panhandle. Although students may request specific sites, each site has a limited enrollment and students may be assigned to sites they do not request. Students are responsible for procuring housing, including the assessment of its safety and living conditions. Students are also responsible for housing and other living expenses incurred when assigned to rotation sites away from the Auburn and Mobile campuses.

Undergraduate

- Drug and Biopharmaceutical Sciences

Graduate

- Pharmaceutical Sciences: Health Outcomes Research and Policy Option — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/healthoutcomesresearchandpolicy_ms/)
- Pharmaceutical Sciences: Health Outcomes Research and Policy Option (Non-Thesis) — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmaceuticalscienceshorpoption_ms/)
- Pharmaceutical Sciences: Health Outcomes Research and Policy Option — PhD (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacalsciences_phd/)
- Pharmaceutical Sciences: Medicinal Chemistry Option - Graduate Certificate (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/medicinalchemistry_gcrt/)
- Pharmaceutical Sciences: Medicinal Chemistry Option — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/medicinalchemistry_ms/)
- Pharmaceutical Sciences: Medicinal Chemistry Option (Non-Thesis) — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacalsciencesmedicinalhemistryption_major/)
- Pharmaceutical Sciences: Medicinal Chemistry Option — PhD (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/medicinalchemistry_phd/)
- Pharmaceutical Sciences: Pharmaceutics Option — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacalsciencesoptionms_major/)
- Pharmaceutical Sciences: Pharmaceutics Option — PhD (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacalsciences_phd/)
- Pharmaceutical Sciences: Pharmaceutics Option (Non-Thesis) — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacalsciencesnonthesis_phd/)
- Pharmaceutical Sciences: Pharmacology Option — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacology_ms/)
- Pharmaceutical Sciences: Pharmacology Option (Non-Thesis) — MS (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacology_ms_nonthesis/)
- Pharmaceutical Sciences: Pharmacology Option — PhD (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmacology_phd/)

Graduate Certificates

- Medicinal Chemistry (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/medicinalchemistry_gcrt/)
- Neuroscience (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/neuroscience_gcrt/)

Professional

- PharmD Pharmacy – DPY (https://bulletin.auburn.edu/thegraduateschool/graduatedegreesoffered/pharmD/)

Drug Discovery and Development Courses

DRDD 5800 SURVEY OF MULTI-MODALITY MOLECULAR IMAGING (2) LEC. 2. Departmental approval. State-of-the-art survey of molecular imaging techniques that are available and their use to monitor the progression of various human diseases.

DRDD 6800 SURVEY OF MULTI-MODALITY MOLECULAR IMAGING (2) LEC. 2. Departmental approval. State-of-the-art survey of molecular imaging techniques that are available and their use to monitor the progression of various human diseases.

DRDD 7000 INTRODUCTION TO GRANT WRITING (3) LEC. 3. Course will train students to prepare NIH RO1 grant applications. Students will prepare mock applications on topics of their choosing.

DRDD 7010 PHARMACOKINETICS (4) LEC. 4. Departmental approval. Pharmacokinetic and pharmacodynamic principles and methods used to study the absorption, distribution, metabolism and excretion of drugs.

DRDD 7020 SCIENCE AND TECHNOLOGY OF TABLETING (2) LEC. 2. Pr. (PYPS 7030 or DRDD 7030) or Departmental approval. Formulation, compression, coating and evaluation of tablets.

DRDD 7021 SCIENCE AND TECHNOLOGY OF TABLETING LAB (2) LAB. 6. Pr. (PYPS 7020 or DRDD 7020). Actual formulation, compression, coating and evaluation of tablets.

DRDD 7030 DRUG PRODUCTS AND BIOPHARM (4) LEC. 4. Departmental approval. Formulation, evaluation, and use of various pharmaceutical dosage forms including biopharmaceutical aspects.

DRDD 7040 PHYSICAL PHARMACY (4) LEC. 4. Departmental approval. Application of physical chemical principles to dosage form design and evaluation.

DRDD 7050 NOVEL DOSAGE FORMS (3) LEC. 3. Pr. PYPS 7030 or DRDD 7030 or Departmental approval. Theoretical basis and design of controlled release and site specific drug delivery systems.

DRDD 7060 FORMULATION AND DELIVERY OF PEPTIDE/PROTEIN DRUGS (3) LEC. 3. Pr. PYPS 7030 or DRDD 7030 or Departmental approval. Formulation and delivery problems unique to peptide/protein pharmaceuticals and strategies to overcome such problems.

DRDD 7070 TRANSPORT PHENOMENA IN PHARMACEUTICAL SYSTEMS (3) LEC. 3. Departmental approval. Mechanisms of drug transport in various pharmaceutical dosage forms and biological systems. Elucidation of methods to characterize drug transport phenomena. Correlation of transport phenomena with drug disposition in the body. Emphasis on peptide, protein, and oligonucleotide drugs.

DRDD 7080 ADVANCED BIOPHARMACEUTICS (3) LEC. 3. Pr. PYPS 7010 or DRDD 7010. The mathematical and pharmacokinetic relationships between physical and chemical properties of a drug and its dosage form and biological effects.

DRDD 7090 PHARMACEUTICAL SCIENCE I: TARGETS (4) LEC. 4. Departmental Approval. Study of nature and function of drug targets, advanced molecular mechanisms by which drugs interact with these targets and the basic principles of drug design.

DRDD 7100 PHARMACEUTICAL SCIENCE II: ADME (4) LEC. 4. Departmental Approval. Study of the mechanisms of drug absorption, distribution, metabolism and elimination with an advanced study of drug design strategies and methods to optimize these processes.

DRDD 7110 STABILITY KINETICS OF PHARMACUTICALS (3) LEC. 3. Pr. PYPS 7030 or DRDD 7030 or Departmental approval. Principles of chemical kinetics as applied to the unique stability problems of the various pharmaceutical dosage forms.

DRDD 7200 NATURAL PRODUCTS CHEMISTRY (3) LEC. 3. This course is designed as an introduction to the chemistry of natural products of plant origin with medicinal importance. Traditional and modern approaches to plant natural product drug discovery will be discussed. Major biosynthetic pathways of plant secondary metabolites will be covered and used to classify natural products into distinct groups (alkaloids, sesquiterpenoids, diterpenes, triterpenes, saponins, flavonoids, anthraquinones, coumarins, lignans, amino acids, and peptides) and to display the relationships between diverse structures encountered in nature.

DRDD 7230 ADVANCED MEDICINAL CHEMISTRY I (3) LEC. 3. Departmental approval. Explanation of the principles of Medicinal Chemistry progressing to qualitative and quantitative descriptions of the synthesis, influence of physical and chemical properties of chemical substances on biological activity and biodisposition.

DRDD 7240 ADVANCED MEDICINAL CHEMISTRY II (3) LEC. 3. Pr. PYPS 7230. Departmental approval. Advanced study of organic medicinal agents featuring organic synthesis, chemical and pharmacological properties and current literature topics.

DRDD 7250 DRUG ACTION AND DESIGN (3) LEC. 3. Pr. (PYPS 7230 or DRDD 7230) and (PYPS 7240 or DRDD 7240). Modern molecular modeling methods with emphasis on computer-aided drug design, quantitative structure activity relationships and combinatorial chemistry.

DRDD 7260 SEPARATION SCIENCE (4) LEC. 4. Departmental approval. A survey of modern separation science with emphasis on analytical scale techniques including gas chromatography, liquid chromatography and electrokinetic separations.

DRDD 7270 MASS SPECTROMETRY OF ORGANIC COMPOUNDS (4) LEC. 4. Departmental approval. A survey of modern techniques in mass spectrometry with emphasis on fragmentation chemistry and structure education.

DRDD 7280 NEUROSCIENCE METHODS (3) LEC. 3. This course is designed to provide a conceptual and practical understanding of several of the most common techniques in neuroscience. The interactive lectures will serve to illustrate the ways in which various experimental approaches have been used to advance specific areas of neuroscience, particularly in the context of neuropsychological diseases or processes.

DRDD 7290 NEUROPHARMACOLOGY OF DRUG ABUSE (2) LEC. 2. Departmental approval. An in-depth study of drugs of abuse, including mechanisms of action, pharmacokinetics, addiction, physical dependence and the effects of drug use during pregnancy. Substance abuse treatment strategies will also be discussed.

DRDD 7300 NEUROPHARMACOLOGY (3) LEC. 3. Neurochemical mechanisms related to the pharmacological actions of medicinal agents affecting the central nervous system.

DRDD 7310 PSYCHOPHARMACOLOGY I (3) LEC. 3. Discussions on anxiety, depression and related disorders.

DRDD 7320 PSYCHOPHARMACOLOGY II (3) LEC. 3. Discussions on schizophrenia, Alzheimer's disease, experimental methods and animal models of disorders.

DRDD 7330 PHARMACOLOGY RESEARCH METHODS (3) LEC. 1. LAB. 9. Experimental design, research methods and data analysis in pharmacology.

DRDD 7340 ORGAN SYSTEMS PHARMACOLOGY I (3) LEC. 3. The course will evaluate the basic principles and rationale for current and novel pharmacological therapeutics for various disease states.

DRDD 7350 ORGAN SYSTEMS PHARMACOLOGY II (3) LEC. 3. The course will evaluate the mechanism of action and rationale for current and novel pharmacological therapeutics for various disease states.

DRDD 7360 CELLULAR & MOLECULAR PHARMACOLOGY & TOXICOLOGY I (3) LEC. 3. Cellular biology course integrated with pharmaceutical sciences for the study of pharmacologically related mechanisms at the molecular and cellular levels.

DRDD 7370 CELLULAR & MOLECULAR PHARMACOLOGY & TOXICOLOGY II (3) LEC. 3. Pr. PYPS 7360 or DRDD 7360. Cellular biology course integrated with pharmaceutical sciences for the study of pharmacologically related mechanisms at the molecular and cellular levels. This is a continuation of PYPS 7360/DRDD 7360.

DRDD 7380 DRUG DISCOVERY (3) LEC. 3. This course is a survey of modern approaches to drug discovery. It is designed to familiarize students with different steps of drug discovery from target identification to the development of clinical candidates. (Clinical trials, and approval process will be covered in Drug Development class, which will be offered in spring 2020.) We will discuss the techniques used at the different stages of drug discovery process in the course are also widely used in basic biomedical research laboratories.

DRDD 7390 CANCER PHARMACOLOGY AND DRUG DISCOVERY (3) LEC. 3. Pr. VBMS 7970. This course is designed as an introduction to anti-cancer drugs and anti-cancer drug discovery. The course will build on the principles of cancer biology that are introduced in VBMS 7970 Cancer Biology. This course will begin with a survey of anticancer drugs. Classic cytotoxic agents will be discussed, followed by targeted chemotherapeutic agents. A discussion of strategies used to discover classic cytotoxic agents will be followed by strategies used to discover targeted chemotherapeutic agents. The discussion of targeted drug discovery will focus on target identification and validation, hit generation and optimization, and preclinical lead evaluation. Course meetings will feature the primary literature so as to enable students to translate lecture topics to application.

DRDD 7400 PHARMACOGENOMICS AND TRANSLATIONAL RESEARCH METHODS ORIENTATION (3) LLB. Departmental approval. This course consists of lectures and laboratory orientation sessions designed to introduce the basic concepts of pharmacogenomics and translational research in precision medicine.

DRDD 7500 METABOLISM AND DISPOSITION XENOBIOTICS (2) LEC. 2. Portals of entry, absorption, distribution and elimination of drugs and xenobiotics. Metabolic mechanisms relevant to chemical structure and principles of pharmacokinetics will be emphasized.

DRDD 7510 ENVIRONMENTAL TOXICOLOGY (3) LEC. 3. Mechanisms of action of agricultural and industrial chemicals, drugs, radiation, metals, gases, air particulates, food additives, plant and food poisons in the environment.

DRDD 7600 HETEROCYCLIC MEDICINAL CHEMISTRY (3) LEC. 3. Pr. CHEM 7220. Departmental approval. A survey of chemical nature of heterocyclic moieties of medicinal substances with emphasis on methods of synthesis of medicinally important compounds containing a heterocyclic ring.

DRDD 7930 DIRECTED STUDIES IN PHARMACAL SCIENCES (1-3) LEC. Departmental approval. Selected laboratory research topics in the pharmaceutical sciences. Course may be repeated for a maximum of 98 credit hours.

DRDD 7950 SEMINAR (1) SEM. 1. SU. 1 CR; may be repeated multiple times for credit. Course may be repeated for a maximum of 6 credit hours.

DRDD 7960 SPEC PROB IN PHARM SCIE (1-3) IND. At least 6 credits each with a minimum grade of B in DRDD 7000-7999 Selected study topics in the pharmaceutical sciences. Departmental approval and 6 hours of 7000-level courses. Course may be repeated for a maximum of 6 credit hours.

DRDD 7980 NON-THESIS RESEARCH (1-3) RES. Non-thesis research project, to be determined by faculty advisor and student's graduate advisory committee. Course may be repeated for a maximum of 14 credit hours.

DRDD 7990 RESEARCH AND THESIS (1-10) MST. Research And Thesis. Course may be repeated with change in topics.

DRDD 8930 DIRECTED STUDIES IN PHARMACAL SCIENCES (1-3) LEC. Departmental approval. Selected laboratory research topics in the pharmaceutical sciences. Course may be repeated for a maximum of 6 credit hours.

DRDD 8950 SEMINAR (1) SEM. 1. SU. 1 CR; may be repeated multiple times for credit. Course may be repeated for a maximum of 10 credit hours.

DRDD 8960 DIRECTED READINGS IN PHARMACAL SCIENCES (1-3) IND. Pr. At least 6 credits each with a minimum grade of B in DRDD 7000-7999. Selected study topics in the pharmaceutical sciences. Course may be repeated for a maximum of 6 credit hours.

DRDD 8990 RESEARCH AND DISSERTATION (1-10) DSR. Research for doctoral students. Course may be repeated with change in topics.

Drug and Biopharmaceutical Sci Courses

DBPS 1010 INTRODUCTION TO DRUG AND BIOPHARMACEUTICAL SCIENCES I (1) LEC. 1. Departmental approval. This course explores the development of the field of drug and biopharmaceutical sciences and its' relationship to disease treatment from ancient to medieval to current day. This historical prospective provides the foundation for appreciation of human creativity in the advancement of health care and the treatment of human diseases.

DBPS 1020 INTRODUCTION TO DRUG AND BIOPHARMACEUTICAL SCIENCES II (1) LEC. 1. Pr. DBPS 1010. Departmental approval. This course introduces the field of drug and biopharmaceutical sciences to first-year students and provides exposure to a variety of major sub-disciplines and associated opportunities. The course will operate as a series of seminars presented by recognized authorities on subjects such as drug toxicity, drug dosages and routes, drug metabolism, drug distribution, drugs for cancer, drugs for Alzheimer's disease, monoclonal antibody-based drugs, antibiotics, forensic chemistry, drug synthesis, etc. These seminars and lectures will allow the student to recognize the breath of the field and future career opportunities. The exact set of seminars and subject matter will vary from year-to-year.

DBPS 2010 FUNDAMENTALS OF BIOMEDICINAL CHEMISTRY I (4) LEC. 4. Pr. CHEM 1030 and CHEM 1031 and CHEM 1040 and CHEM 1041 and (BIOL 1020 or BIOL 1027) and BIOL 1021 and DBPS 1010 and DBPS 1020. Departmental approval. This course explores the relationships between the structural features of drugs and biomolecules and their physicochemical properties including solubility, ionization, intermolecular interactions and reactivity. These concepts are the foundation principles for understanding the actions of drugs at their biologic targets and how the biologic environment processes drugs.

DBPS 2020 FUNDAMENTALS OF BIOMEDICINAL CHEMISTRY II (4) LEC. 4. Pr. CHEM 1030 and CHEM 1031 and CHEM 1040 and CHEM 1041 and (BIOL 1020 or BIOL 1027) and BIOL 1021 and DBPS 1010 and DBPS 1020 and DBPS 2010 and DBPS 2030. Departmental approval. This course explores the relationships between the structural features of biomolecules and their physicochemical properties including solubility, ionization, intermolecular interactions and reactivity. These concepts are the foundation principles for understanding the properties of biologic targets and how drugs interact with targets to produce their therapeutic effects.

DBPS 2030 DRUG TARGETS I (4) LEC. 4. Pr. (BIOL 1020 or BIOL 1027) and BIOL 1021 and DBPS 1010 and DBPS 1020. Departmental approval. This is the first of a two-course survey sequence designed to explore various biological targets (cells, tissues, organs, micro-biomolecules, and macro-biomolecules) present in the central nervous system (brain and spinal cord), eye, ears, respiratory tract, and gastrointestinal tract for a drug to interact and to impose/enforce its effect in the body. This course will further explain the natural substances (ligands) that interacts with the above targets. These basic concepts are the fundamental principles for understanding the actions of drugs in the body (centrally or peripherally).

DBPS 2040 DRUG TARGETS II (4) LEC. 4. Pr. (BIOL 1020 or BIOL 1027) and BIOL 1021 and DBPS 1010 and DBPS 1020 and DBPS 2030. Departmental approval. This course explores various biological targets (cells, tissues, organs, micro-biomolecules, and macro-biomolecules) present in the cardiovascular, renal system, skin, endocrine system, sexual organs, and bones for a drug to interact and to impose/enforce its effect in the body. This course will further explain the natural substances (ligands) that interacts with the above targets. The above basic concepts are the fundamental principles for understanding the actions of drugs in the body (centrally or peripherally).

DBPS 2050 BIOPHARMACEUTICAL DATA ANALYSIS I (1) LEC. 1. Pr. DBPS 1010 and DBPS 1020. Departmental approval. This course introduces the methods and mathematical concepts of analysis and sampling, as specifically applied to drug and biopharmaceutical sciences. Topics include descriptive measures, probability and distributions, estimation, tests of hypotheses, types of error, significance, confidence levels, sample size and power.

DBPS 2060 BIOPHARMACEUTICAL DATA ANALYSIS II (1) LEC. 1. Pr. DBPS 1010 and DBPS 1020 and DBPS 2050. Departmental approval. This course is a continuation of Biopharmaceutical Calculations & Statistics I and focuses on mathematical concepts of analysis and sampling in biopharmaceutical sciences research and production. Topics include estimation, tests of hypotheses, types of error, significance, confidence levels, sample size and power.

DBPS 3010 MEDICINAL CHEMISTRY I (4) LEC. 4. Pr. DBPS 2020 and DBPS 2040 and DBPS 2060. Departmental approval. This course will combine a discussion of the nature and function of drug targets (including enzymes, receptors, ion channels, pumps, RNA and DNA) with study of molecular mechanisms by which drugs interact with these targets and the basic principles of drug design. The course will use currently relevant examples for each target class and is not intended to provide a comprehensive review of all drug classes at all targets. Course materials will include class lecture notes and assigned readings from the current literature. With this knowledge, the student will be better equipped to understand the molecular basis of drug action and the challenges of drug design in a wide variety of therapeutic situations.

DBPS 3020 MEDICINAL CHEMISTRY II (3) LEC. 3. Pr. DBPS 3010 and DBPS 3050. Departmental approval. This course will provide a comprehensive description and analysis of the relationships between drug/dosage form properties and biodisposition, including absorption, distribution, metabolism and elimination. Methods of drug design to optimize drug biodisposition and pharmacokinetics also will be summarized in overview. This course will serve as a foundational instructional unit for all students interested in pursuing advanced study in the areas of drug discovery and development.

DBPS 3030 DRUG ACTION I (4) LEC. 4. Pr. DBPS 2020 and DBPS 2040 and DBPS 2060. Departmental approval. This is the first of a two-course sequence focused on the mechanism of drug action, adverse drug reactions, and drug-interactions as a drug interacts with its' biological target sites. This course will identify the etiology, understand the disease state effects on target sites, and symptoms of major diseases related to the central nervous system (brain and spinal cord), eye, ears, respiratory tract, and gastrointestinal tract.

DBPS 3040 DRUG ACTION II (4) LEC. 4. Pr. DBPS 3030. Departmental approval. This course will identify the etiology, understand the various pathophysiology, and symptoms of major disease states related to the renal system, endocrine system, cardiovascular system, infection, tumor/cancer, bones, integumentary system, sexual organs, for a drug to exert its prophylactic and therapeutic actions. This course will further explain the mechanism of drug action, adverse drug reactions, and drug-interactions.

DBPS 3050 DRUG FORMULATIONS (3) LEC. 3. Pr. DBPS 2020 and DBPS 2060. Departmental approval. Physical-chemical principles and technologies used in the formulation, manufacture and compounding of solid and oral liquid (solution) pharmaceutical dosage forms and novel drug delivery systems.

DBPS 3060 DRUG PHARMACOKINETICS (4) LEC. 4. Pr. DBPS 3010 and DBPS 3030 and DBPS 3050. Departmental approval. The course deals with absorption, plasma protein binding, tissue distribution and elimination of drugs by liver and kidneys and how these processes determine the overall disposition of the drug in the organism. In addition, the relationships between dose and plasma concentration and of plasma concentration and effect are described, both for a given drug and its metabolites. A brief introduction to the use of pharmacokinetic methods for drug development is given. The course also deals with calculation and evaluation of mathematical parameters that describe pharmacokinetic and pharmacodynamic processes, both regarding single dose and repeated dose administration. Finally, it describes the theoretical basis for clinical drug dosing, reasons for and rational handling of inter-individual variation (genomics) in drug disposition as well as drug-drug interactions.

DBPS 3070 DRUG RESEARCH SEMINAR I (1) LEC. 1. SU. Pr. DBPS 2020 and DBPS 2040. Departmental approval. This research seminar course will feature weekly presentations by graduate students, postdoctoral fellows, faculty and visiting scholars. The presentations will introduce DBPS students to current drug discovery and development research advancements in the fields of medicinal chemistry, pharmacology and pharmaceutics.

DBPS 3080 DRUG RESEARCH SEMINAR II (1) LEC. 1. SU. Pr. DBPS 2020 and DBPS 2040. Departmental approval. This research seminar course will feature weekly presentations by graduate students, postdoctoral fellows, faculty and visiting scholars. The presentations will introduce DBPS students to current drug discovery and development research advancements in the fields of medicinal chemistry, pharmacology and pharmaceutics.

DBPS 3400 GLOBAL HEALTH (1-3) AAB. SU. This study abroad course introduces students to key concepts and challenges in global health through immersive international travel. Students will explore topics such as access to pharmaceuticals, health systems and policies, and the cultural, social, and economic determinants of health. The course also examines traditional and alternative healing practices, including herbal therapies (including research) and non-Western treatments, to provide a holistic understanding of health across diverse global contexts. Course may be repeated for a maximum of 3 credit hours.

DBPS 4960 SPECIAL PROBLEMS IN DRUG AND BIOPHARMACEUTICAL SCIENCES (1-3) LEC. 3-8, LAB. 3-40. SU. Selected study topics in drug and biopharmaceutical sciences. Departmental approval required. Course may be repeated for a maximum of 6 credit hours.

DBPS 4980 RESEARCH (1-5) LAB. 15. Pr. DBPS 3020 and DBPS 3040 and DBPS 3060 and DBPS 3080. Course Description for each discipline of DBPS Program: Departmental approval required. DBPS program disciplines include Pharmacological/Biomedical Sciences, focusing on molecular disease mechanisms, therapeutic targets, drug action, and novel treatments; Pharmaceutics and Drug Delivery, emphasizing formulation science, biopharmaceutics, compounding, nanotechnology, and pharmacokinetics; and Medicinal Chemistry and Drug Development, covering drug synthesis, structure-activity relationships, and modern drug design and analysis methods. Course may be repeated for up to 10 credit hours. Course may be repeated for a maximum of 10 credit hours.

Health Outcomes Research Pol Courses

HORP 7510 HEALTH SERVICES DELIVERY AND EVALUATION (3) LEC. 3. Enrollment in the MS or PhD Program in Pharmaceutical Science with Health Outcomes Research and Policy Option or Departmental approval. Introduction to basic methods and frameworks for undertaking research and program evaluation within health services organizations and systems.

HORP 7520 SOCIAL AND BEHAVIORAL THEORY IN HEALTH (3) LEC. 3. Enrollment in the MS or PhD Program in Pharmaceutical Science with Health Outcomes Research and Policy Option Introduction to the basic theories of behavior and intervention used in practice and research to evaluate changes in health, humanistic, and economic outcomes among patients.

HORP 7530 PHARMACEUTICAL ECONOMICS, OUTCOMES, AND POLICY (3) LEC. 3. Enrollment in the MS or PhD Program in Pharmaceutical Science with Health Outcomes Research and Policy Option or Departmental approval. The graduate-level course is intended to introduce students to concepts relevant to pharmaceutical outcomes, economics, and policy. The course provides foundational knowledge surrounding healthcare.

HORP 7540 PHARMACOEPIDEMIOLOGY: METHODS AND APPLICATIONS (3) LEC. 3. Enrollment in the MS or PhD Program in Pharmaceutical Science with Health Outcomes Research and Policy Option or Departmental approval. STAT 6110 or equivalent SAS training. The course covers topics in pharmacoepidemiology focusing on the methods and applications of analyzing large healthcare claims databases and electronic medical records.

HORP 7720 MOTIVATIONAL INTERVIEWING FOR HEALTH BEHAVIORS (3) LEC. 2, IND/LEC. 1. Enrollment in the MS or PhD Program in Pharmaceutical Science with Health Outcomes Research and Policy Option or Departmental approval. Concepts, current research applications, and intervention development training in motivational interviewing for health behavior change interventions.

HORP 7820 RESEARCH METHODS AND DESIGN HEALTH SCIENCE I (2) LEC. 2. Departmental approval. Application of scientific methods in health care.

HORP 7830 RESEARCH METHODS IN THE HEALTH SCIENCES (3) LEC. 3. Pr. PYPC 7820 or HORP 7820. Application of the principles and concepts obtained in PYPC 7820/HORP 7820.

HORP 7840 MEDICATION INFORMATION SYSTEMS (3) LEC. 3. Health system informatics theories and methodologies. Demonstration of how information reduces uncertainty in health-care decision-making.

HORP 7860 THE PHARMACIST'S ROLE IN IMPROVING PATIENT ADHERENCE (3) LEC. 3. Pr. PYPC 7820. Theories and methodologies involved in adherence to medication regimens.

HORP 7870 SOCIAL, BEHAVIORAL, AND ADMINISTRATIVE ASPECTS OF PHARMACY PRACTICE (3) LEC. 3. Theories and applications in social, behavioral, and administrative aspects of pharmacy practice and medication use systems.

HORP 7950 SEMINAR (1) SEM. 1. SU. 1 CR; may be repeated multiple times for credit. Required of all Pharmaceutical Science MS students with Health Outcomes Research and Policy Option. Course may be repeated for a maximum of 6 credit hours.

HORP 7960 SPECIAL PROBLEMS IN HEALTH OUTCOMES RESEARCH (2-3) LEC. Departmental approval. Special problems. Course may be repeated for a maximum of 6 credit hours.

HORP 7980 NON-THESIS RESEARCH (1-3) RES. SU. Pharmaceutical Sciences Non-Thesis MS Graduate Student and approval from the Graduate Program Coordinator. The specific research topic and its credit hour(s) will be decided by the student's research advisor, in collaboration with the student and the student's research advisory committee. Course may be repeated for a maximum of 4 credit hours.

HORP 7990 RESEARCH AND THESIS (1-10) MST. Credit hours to be arranged. Course may be repeated with change in topics.

HORP 8950 SEMINAR (1) SEM. 1. SU. 1 CR; may be repeated multiple times for credit. Required of all Pharmaceutical Science PhD students with Health Outcomes Research and Policy Option. Course may be repeated for a maximum of 10 credit hours.

HORP 8960 SPECIAL PROBLEMS IN HEALTH OUTCOMES RESEARCH (1-3) LEC. Departmental approval. Credit hours to be arranged. Course may be repeated for a maximum of 6 credit hours.

HORP 8990 RESEARCH AND DISSERTATION (1-10) DSR. Credit hours to be arranged. Course may be repeated with change in topics.

Interdept Pharmacy Courses

PYDI 4980 INTRODUCTION TO UNDERGRADUATE RESEARCH IN PHARMACY (1-3) IND. SU. Departmental approval. Individual problems course. Students will work under the direction of a faculty member on some problem of mutual interest. Course may be repeated for a maximum of 6 credit hours.

PYDI 9030 MENTAL ILLNESS I: SERIOUS MENTAL ILLNESS (1) LEC. 2. To expose pharmacy students to psychiatry and to develop a working knowledge of both basic and advanced issues related to psychiatric illnesses. Must be enrolled in Doctor of Pharmacy program.

PYDI 9040 MENTAL ILLNESS II: ANXIETY, ALZHEIMERS AND AUTISM (1) LEC. 2. To expose pharmacy students to psychiatry and to develop a working knowledge of both basic and advanced issues related to psychiatric illnesses. Continuation of PYDI 9030. Must be enrolled in Doctor of Pharmacy program.

PYDI 9050 AMBULATORY CARE PHARMACY PRACTICE (1) LEC. 2. The Ambulatory Care Pharmacy elective will expose the students to this practice setting and the unique patient and practice issues associated with developing an ambulatory care practice. Must be enrolled in Doctor of Pharmacy program.

PYDI 9070 THE ART OF WELLBEING (1) LEC. 2. This course will explore the following aspects of wellbeing: career, social, financial, physical and community. Additionally, students will gain insight into their own well-being through identifying areas they are thriving in, and areas they can improve. Ultimately, strategies to improve wellbeing in a particular area will be created and implemented. Must be enrolled in Doctor of Pharmacy program.

PYDI 9160 DEVELOPMENT AND IMPLEMENTATION OF MTM SERVICES (1) LEC. 2. The course focuses on the development and implementation of Medication Therapy Management (MTM) services. Topics discussed include a review of the MTM process, development of MTM services, billing opportunities, case-based approaches to performing MTM, and different technology platforms to assist with the delivery and documentation of MTM services. Must be enrolled in Doctor of Pharmacy Program.

PYDI 9170 MENTAL HEALTH FIRST AID (1) LEC. 1. Pr. PYPD 9230. This course will provide health professional students the skills they need to reach out and provide the initial help and support to someone who may be developing a mental health or substance use problem, or experiencing a crisis.

PYDI 9180 IMMERSIVE TECHNOLOGIES IN HEALTHCARE (1) LEC. 1. Pr. PYPD 9230. Immersive technologies are defined as those that blur the lines between the real world and a virtual world, creating a sense of immersion. This course will introduce HCOP students to these technologies and review examples of both patient-facing and learner-facing applications. HCOP students will also learn the basics of health behavior theories that inform the use of these technologies and the process of development of immersive applications, in very basic, accessible terms.

PYDI 9800 SURVEY OF MULTI-MODALITY MOLECULAR IMAGING FOR PHARM.D. (2) LEC. 2. State-of-the-art survey of molecular imaging techniques and clinical imaging modalities that are available and their use to monitor the progression of various human diseases.

PYDI 9960 SPECIAL PROBLEMS IN PHARMACY (1-3) IND. Independent study of problems related to pharmacy under the direction of a faculty member. Departmental approval. Fall. Spring. Course may be repeated for a maximum of 6 credit hours.

PYDI 9970 SPECIAL TOPICS IN PHARMACY (1-3) LEC. 1-3. Instruction and discussion in a selected current topic in Pharmacy. Fall, Spring. Course may be repeated for a maximum of 3 credit hours.

Pharmacy PharmD Courses

PYPD 9000 ORIENTATION (1) WSP. 12.5. This one week course introduces the expectations for a student in the Harrison School of Pharmacy's Practice Ready Curriculum. The course introduces aspects of the role of the pharmacist in healthcare including team member, interprofessional practice, and continual professional development.

PYPD 9010 DRUGS IN PREGNANCY AND LACTATION (1) LEC. 1. The purpose of this course is to introduce pharmacy students to the concepts of teratogenicity, pregnancy and lactation. Non-pharmacological and pharmacological therapy is focused to common pregnancy disease states and lactation issues.

PYPD 9020 FOUNDATIONS OF LEADERSHIP WITHIN THE PHARMACY PROFESSION (1) LEC. 1. This course will allow students to identify leadership skills, traits and values. Leadership tools and resources will be discussed. Students will be exposed to leadership within the practice of pharmacy as well as pharmacy organizations.

PYPD 9030 INTRODUCTION TO PEDIATRICS (1) LEC. 1. The purpose of this course is to introduce students to the basic concepts regarding pediatric development and care including but not limited to normal growth and development, pediatric calculations, community based care, counseling skills, and common disease states.

PYPD 9040 KIDNEYS, DRUGS AND ELIMINATION: WHAT PHARMACISTS NEED TO KNOW (1) LEC. 1. Students will gain in-depth knowledge of how declining kidney function and renal replacement modalities affect biopharmaceutics and develop experience in evaluating drug information related to renal dosing.

PYPD 9050 ONCOLOGY CARE (1) LEC. 1. This course will provide student pharmacists with a working knowledge of cancer as a disease state, as well as the pharmacotherapeutics of chemotherapy, targeted therapy, and biologic therapy. Additionally, students will explore aspects of supportive care, ADR and drug interaction management, chemotherapy administration, and drug monitoring. The structure of the course is highly collaborative and interactive. Students are expected to participate in group activities with a professional and collegial spirit.

PYPD 9060 SELF-CARE AND NONPRESCRIPTION PHARMACOTHERAPY (1) LEC. 1. This course will introduce students to nonprescription pharmacotherapy and other self-care measures used in the outpatient setting to treat minor medical problems. As the most accessible health care professionals, pharmacists are often approached by members of the community to recommend treatments for common ailments. It is important for pharmacists to quickly and accurately assess patients to determine if they are an appropriate self-care candidate or if referral to another health care provider is warranted. This course will expand upon self-care and nonprescription pharmacotherapy topics introduced in the required curriculum, introduce students to self-care issues specific to various special populations, and allow students to learn from one another through group presentations and case discussions.

PYPD 9080 POPULATION HEALTH IPPE (2) CLN. 2. SU. This course is a longitudinal introductory pharmacy practice experience (IPPE) that students will complete during the P2 year. During this course, practical concepts related to pharmaceutical care and the pharmacists' patient care process are re-enforced through the provision of basic care to community based patients. Students will earn 10 IPPE hours from the successful completion of the course. Earning of IPPE hours will be done through multiple formats including traditional in-home patient encounters, patient care simulations, as well as other practical experiences in collaboration with community partners.

PYPD 9160 COMMUNITY PHARMACY IPPE (2) LEC. 2. SU. Students will be exposed to a community pharmacy setting in which they will gain experience in the drug distribution process, patient counseling, and interprofessional collaboration. Students will have opportunities to apply concepts and clinical knowledge learned during their P1 year. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic Programs.

PYPD 9170 HEALTH SYSTEM PHARMACY IPPE (2) CLN. SU. Students will have opportunities to apply concepts and clinical knowledge previously learned to patient care in the setting of a functioning institutional pharmacy. They will participate in patient care through the drug distribution process, prospective drug review, drug monitoring, and interprofessional interactions. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic Programs.

PYPD 9180 CLINICAL PHARMACY IPPE (1) LEC. 1. SU. This is an introductory pharmacy practice experience (IPPE) course focused on providing pharmaceutical care to patients in a primary/ambulatory care or acute care setting. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic Programs.

PYPD 9190 HEALTH AND WELLNESS INTRODUCTORY PHARMACY PRACTICE EXPERIENCE (1) CLN. 1. SU. This is an Introductory Pharmacy Practice Experience (IPPE) that students will complete during a one-week block in their P2 year. Students will receive 40 IPPE hours upon completing the course. Students will build upon their initial exposure to the community pharmacy setting that occurred during their three-week Community Pharmacy IPPE in the Summer after their P1 year and focused on the medication distribution process. The focus of the Health and Wellness rotation experience is providing clinical services to patients within in the community pharmacy setting. Students have opportunities to apply concepts and clinical knowledge learned during their P1 and P2 years to the community pharmacy setting. Students will be engaged in determining patients' immunization status and making appropriate recommendations. Students will educate patients on immunizations and administer immunizations under the supervision of their licensed pharmacist preceptor. Another area of emphasis during this experience will be screening patients for hypertension and diabetes by performing blood pressure and blood glucose measurements. Students will interpret and explain results of health screenings to patients and educate them on the importance of self-monitoring. Admission into the Doctor of Pharmacy Program or approval of the Associate Dean for Academic Affairs.

PYPD 9200 INTEGRATED LEARNING EXPERIENCE I (6) LEC. 6. Students will acquire foundational knowledge of Hypertension, Diabetes Mellitus, Obesity Management, Diarrhea and Constipation, Fluid and Electrolytes, and Hypersensitivity. These disease states will provide context for students to develop knowledge and skills of various aspects of the Patient Care Process.

PYPD 9210 INTEGRATED LEARNING EXPERIENCE II (6) LEC. 6. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs. Students will acquire foundational knowledge of Lipids, Depression, Alzheimer's/ Dementia, Hypothyroid, Asthma, Chronic obstructive pulmonary disease (COPD), and Smoking Cessation. These disease states will provide context for students to develop knowledge and skills of various aspects of the PPCP.

PYPD 9220 INTEGRATED LEARNING EXPERIENCE III (6) LEC. 6. Pr. (PYPD 9200 or PYPD 9206) and (PYPD 9210 or PYPD 9216). Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs. This six-week course integrates biomedical sciences, pharmaceutical sciences, social/behavioral/administrative sciences, and clinical sciences. Students will acquire foundational knowledge related to Pain, Osteoarthritis (OA), Seizures, Gastroesophageal reflux disease (GERD), Stable ischemic heart disease (SIHD), Stroke, Thromboembolism, and Heart Failure.

PYPD 9230 INTEGRATED LEARNING EXPERIENCE IV (6) LEC. 6. Pr. (PYPD 9200 or PYPD 9206) and (PYPD 9210 or PYPD 9216). This six-week course will focus on knowledge and skills related to various aspects of the Pharmacists' Patient Care Process such as collecting information, conducting assessments, developing and implementing a plan including patient counseling, and documenting patient information. The course includes an introduction to pharmaceutical compounding and foundational knowledge related to over-the-counter treatment of cough, cold, and various dermatologic conditions.

PYPD 9240 INTEGRATED LEARNING EXPERIENCE V (6) LEC. 6. Pr. (PYPD 9220 or PYPD 9226) and (PYPD 9230 or PYPD 9236). This six-week course integrates biomedical sciences, pharmaceutical sciences, social/behavioral/administrative sciences, and clinical sciences to provide students with the knowledge, skills, behaviors, and attitudes necessary for developing into a practice ready pharmacist. During this ILE, students will acquire foundational knowledge related to generalized anxiety disorder; bipolar disorder/ schizophrenia; dementia; Parkinson's disease, attention-deficit/hyperactivity disorder (ADHD); sleep disorders; hepatitis and cirrhosis; pancreatitis; and hyperthyroidism.

PYPD 9250 INTEGRATED LEARNING EXPERIENCE VI (6) LEC. 6. Pr. (PYPD 9220 or PYPD 9226) and (PYPD 9230 or PYPD 9236). This six-week course integrates biomedical sciences, pharmaceutical sciences, social/behavioral/administrative sciences, and clinical sciences to provide students with the knowledge, skills, behaviors, and attitudes necessary for developing into a practice ready pharmacist. During this ILE, students will acquire foundational knowledge related to diabetic ketoacidosis (DKA)/ hyperosmolar hyperglycemic state (HHS); acid-base disturbances; nausea and vomiting; dehydration; chronic kidney disease (CKD) and secondary complications; acute kidney injury (AKI); nutrients/nutrition; and iron deficiency.

PYPD 9260 INTEGRATED LEARNING EXPERIENCE VII (6) LEC. 6. Pr. (PYPD 9240 or PYPD 9246) and (PYPD 9250 or PYPD 9256). Students will acquire foundational knowledge related to HIV/AIDS, fungal and opportunistic infections, upper respiratory tract infections, allergic rhinitis, viral infections, meningitis, and sepsis. Students will increase the depth of disease states and medications encountered in ILE 4 including: skin and soft-tissue infections, pneumonia, urinary tract infections, sexually transmitted diseases, cough and cold, and dermatologic conditions. The disease states will be integrated to allow student understanding of the relationship between the disease states and medications used to treat these disorders. These disease states will provide context for students to apply knowledge and skills of various aspects of the Pharmacists' Patient Care Process such as collecting information, conducting assessments, developing and implementing a plan including patient counseling, and documenting patient care plans in the SOAP format and/or in the electronic health record (EHR). Students will explore the relationship between medicinal chemistry and the physical and chemical properties which affect ADME, as well as how these relate to differences within and between drugs and drug classes. ILE 7 will reinforce previous competencies introduced in ILEs 1-6, allowing students to apply what was learned in a different context (varying disease states and/or more complex situations).

PYPD 9270 INTEGRATED LEARNING EXPERIENCE VIII (6) LEC. 6. Pr. (PYPD 9240 or PYPD 9246) and (PYPD 9250 or PYPD 9256). During this learning experience, students will acquire foundational knowledge related to cardiology, rheumatology, men's and women's health, and neurology. Students will increase the depth of disease states and medications encountered earlier in the program including: stable ischemic heart disease, venous thromboembolism, stroke, heart failure, osteoarthritis, pain, and epilepsy. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs

PYPD 9280 INTEGRATED LEARNING EXPERIENCE IX (6) LEC. 6. Pr. (PYPD 9260 or PYPD 9266) and (PYPD 9270 or PYPD 9276). In this course, students will acquire and/or reinforce knowledge related to inflammatory bowel disease, fluids and electrolytes, nutrition support services, hematology, oncology, sepsis, endocarditis, fungal infections, sedation, delirium of critical illness, glomerulonephritis, diabetic ketoacidosis, acid-base disturbances, and type 1 diabetes. This course reinforces competencies related to using subjective and objective information to determine patient-specific healthcare needs and the formulation of an assessment. The content will reinforce organizing and prioritizing information gathered, assessing the appropriateness of therapy based on efficacy and safety, determining the relevance of medication allergies and interactions, and preventing hospital admissions. The development and implementation of an evidence-based, patientcentered care plan that incorporates the assessment of patient-specific factors and medications will be emphasized throughout. Professional communication, focusing on communicating with patients or healthcare providers when there is an educational need, will be reinforced. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs.

PYPD 9290 INTEGRATED LEARNING EXPERIENCE X (6) LEC. 6. Pr. (PYPD 9260 or PYPD 9266) and (PYPD 9270 or PYPD 9276). This course reinforces competencies related to collecting and using subjective and objective information to determine patient specific healthcare needs and the formulation of an assessment and plan. The content will reinforce organizing and prioritizing information gathered, assessing appropriateness of therapy based on efficacy and safety, determining the relevance of medication allergies and interactions, preventing hospital admissions, and knowing when self-treatment is appropriate versus conditions that need a referral. The development and implementation of an evidence-based, patient-centered care plan that incorporates the assessment of patient-specific factors and medications will be emphasized throughout. Professional communication, focusing on communicating with patients or healthcare providers will be reinforced with emphasis on cultural awareness and barriers in education.

PYPD 9300 INTEGRATED LEARNING EXPERIENCE XI (6) LEC. 6. Pr. (PYPD 9280 or PYPD 9286) and (PYPD 9290 or PYPD 9296). This course reinforces competencies related to collecting and using subjective and objective information to determine patient specific healthcare needs and the formulation of an assessment and plan. The content will reinforce organizing and prioritizing information gathered, conducting medication reconciliation, assessing appropriateness of therapy based on efficacy and safety, determining the relevance of medication allergies, and knowing when self-treatment is appropriate versus conditions that need a referral. The development and implementation of an evidence-based, patient-centered care plan that incorporates the assessment of patient-specific factors and medications will be emphasized throughout. The legal requirements for medication distribution will be emphasized for processing medication orders as well as medication safety reporting and documentation.

PYPD 9310 INTEGRATED LEARNING EXPERIENCE XII (6) LEC. 6. Pr. (PYPD 9280 or PYPD 9286) and (PYPD 9290 or PYPD 9296). This course reinforces competencies related to collecting and using subjective and objective information to determine patient specific healthcare needs and the formulation of an assessment and plan. The content will reinforce the interpretation, verification, processing, and labeling of medications orders in different healthcare settings with increasing complexity, complying with all federal, state, and local laws; collecting, reviewing, and assessing subjective and objective information; identifying and correcting drug-related problems; utilizing appropriate medical and medication informational resources and applying the knowledge of study design and literature analysis; performing calculations; communicating with and educating patients, caregivers and stakeholders; and identifying resources for patient's healthcare needs. The students will further develop an understanding of the relationship between patient-specific factors, including pharmacogenomics, on drug selection and monitoring. Drug interactions will be explored more in-depth as students understand how to predict and resolve drug-drug and drug-disease interactions based on drug-specific and patient-specific factors. Cases will emphasize various patient populations, such as adolescent, pregnancy, and older adult. Immunization assessment and plan will be incorporated in each patient case. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic Programs.

PYPD 9320 LONGITUDINAL EXPERIENCE I (3) LEC. 3. This semester-long course focuses on navigating the health care system. Learners will explore key issues related to patient education/public health, communication, assessment, advocacy, and management.

PYPD 9330 LONGITUDINAL EXPERIENCE II (3) LEC. 3. Pr. (PYPD 9320 or PYPD 9326). Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs. This semester long course integrates multiple disciplines, including social/behavioral/administrative sciences and clinical sciences to introduce students to issues related to public health, population health, and individual health and wellness.

PYPD 9340 LONGITUDINAL EXPERIENCE III (3) LEC. 2.5. Pr. (PYPD 9330 or PYPD 9336). This longitudinal experience will introduce students to topics related to strategic marketing strategies for pharmacists' services and will expose students to different types of innovative pharmacy services in different practice settings. The overall goal of this longitudinal experience is to teach students the pertinent skills and decision-making tools needed to establish a new non-dispensing pharmacy service and justify its existence through both financial and intangible values, as well as to design systems and processes that will foster effective and appropriate communication between the pharmacist and patients, other healthcare providers, and stakeholders.

PYPD 9350 LONGITUDINAL EXPERIENCE IV (3) LEC. 2.5. Pr. PYPD 9340 or PYPD 9346. This Longitudinal experience will build on prior courses with a focus on incorporating and improving a given service within a pharmacy, within the context of services and products. Thus, the Longitudinal will have a Pharmacy Operations Management and Continuous Quality Improvement (CQI) emphasis. Students will be introduced to the CQI process and principles to enable them to 'improve' existing operations and clinical services. The use of a variety of examples will provide opportunities to apply principles to support recommendations regarding pharmacy operations. This will involve data collection and creation of an improvement plan. To complete the exploration of operations and CQI topics, financial considerations will be incorporated, focusing on the entire pharmacy program, including the role of payers. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs

PYPD 9360 LONGITUDINAL EXPERIENCE V (3) LEC. 2.5. Pr. PYPD 9350 or PYPD 9356. This course will focus on the planning and sustainability of pharmacy services through billing, contract, and inventory management along with personnel and formulary management. The emphasis on formulary management will be to assist the Pharmacy and Therapeutics (P&T) committee's decision making regarding which drugs to put on the formulary. The medication use process will also be discussed and applied. The Longitudinal will also prepare students to meet future needs of the pharmacy profession by engaging students in thinking about non-traditional services and ideas.

PYPD 9370 LONGITUDINAL EXPERIENCE VI (3) LEC. 2.5. Pr. PYPD 9360 or PYPD 9366. This semester-long course focuses on providing learners with learning opportunities related to their personal and professional goals. Learners will explore key issues related to drug information / evidence-based medicine, leadership, professionalism, and professional development.

PYPD 9380 GERIATRIC CARE I (1) LEC. 1. This study of geriatric health focuses on geriatric patient assessment and interprofessional care of the older adult patient. Students will be required to evaluate how pharmacists can impact these sequelae through interprofessional care teams while optimizing patient's health-related quality of life. This course focuses on those environmental, psychological, and physiological characteristics that are unique to, or more prevalent among, geriatric patients. Admission into the Doctor of Pharmacy program or permission of the Associate Dean for Academic Programs.

PYPD 9390 GERIATRIC CARE II (1) LEC. 1. This study of geriatric health focuses on geriatric patient assessment and management of common pharmacotherapy issues in the older adult patient. Students will be required to evaluate how pharmacists can impact these sequelae through pharmacotherapy management while optimizing patient's health-related quality of life. This course focuses on those pharmacodynamic and pharmacokinetic characteristics that are unique to, or more prevalent among, geriatric patients. Admission into the Doctor of Pharmacy program or permission of the Associate Dean for Academic Programs.

PYPD 9400 WORKSHOP I (1) LEC. 1. In this workshop, will explore the use of drug information resources and related to the use of drug information resources and population levels.

PYPD 9410 WORKSHOP II (1) LEC. 12.5. Pr. PYPD 9400 or PYPD 9406. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs. This is a focused, intensive, one week workshop where students will acquire theoretical and practical knowledge related to the Pharmacists' Patient Care Process.

PYPD 9420 WORKSHOP III (1) LEC. 12.5. Pr. PYPD 9410 or PYPD 9416. This is a focused, intensive, one-week workshop where students will acquire theoretical and practical knowledge related to a contemporary issue in the field of pharmacy. In this workshop, students will explore the provision of pharmacy-based immunization services utilizing the APhA Pharmacy-Based Immunization Delivery course materials and additional supplemental instructional materials. At the end of this workshop students will have the knowledge and skills related to the development and provision of pharmacy-based immunization services, will know how to serve as a vaccine advocate, and will receive a certificate of completion for the APhA Pharmacy-Based Immunization Delivery course.

PYPD 9430 WORKSHOP IV (1) LEC. 1. Pr. PYPD 9420 or PYPD 9426. This workshop builds upon concepts taught across the first two years in the ILE’s and will utilize information the students have developed from a series of self paced videos designed to teach the basic science concepts of pharmacokinetics. The students will also be expected to incorporate knowledge related to previously covered diseases and medications. The focus of the workshop will be to show the students the application of pharmacokinetic knowledge related to A, D, M, and E in multiple settings (retail, hospital, long term care) of pharmacy practice in a case based setting. Admission into the Doctor of Pharmacy Program or Permission of the Associate Dean for Academic and Student Affairs.

PYPD 9440 WORKSHOP V (1) LEC. 12.5. Pr. PYPD 9430 or PYPD 9436. This is a focused, intensive, one week workshop where students will acquire theoretical and practical knowledge related to pharmacoeconomics and its application to the economic evaluation of pharmaceuticals and the overall healthcare system.

PYPD 9450 WORKSHOP VI (1) DSL/LEC. 12.5. Pr. PYPD 9440 or PYPD 9446. In this focused, intensive, one week workshop students will review and update their patient care skills, determine their own long term career goals, and develop a plan for achieving those goals.

PYPD 9460 FINANCES FOR THE PHARMACIST (1) LEC. 1. Pharmacy students need specific advice to prepare for life after pharmacy school in relation to financial planning including managing debt, credit, budgeting, and banking. After graduation from pharmacy school, the majority of students have high amounts of debt and enter the workforce with a higher income that they are likely unaware of how to manage. Equipping students with skills and knowledge to manage their finances will help them be more productive and avoid pitfalls and anxiety related to finances. Admission into the Doctor of Pharmacy Program or permission of the Associate Dean for Academic Programs.

PYPD 9470 PRINCIPLES OF FUNCTIONAL MEDICINE – A PATIENT CENTERED APPROACH (1) LEC. 1. Students will be introduced to the concept of Functional Medicine and the pharmacist’s role in chronic disease state management using Functional Medicine principles. Students will also examine the impact of holistic healing as a path to overall health and wellness through investigation of their own health and wellness. Students will utilize evidence-based medicine as a framework for these principles and will apply the information learned in this course to patient care. Admission into the Doctor of Pharmacy Program or permission of the Associate Dean for Academic Programs.

PYPD 9480 ADVANCED PHARMACOKINETICS I (1) LEC. 1. SU. Pr. PYPD 9430 or PYPD 9436. The purpose of this course is to build upon basic pharmacokinetic concepts introduced earlier in the curriculum to develop the skills and expertise necessary to create an individualized plan for dosing and monitoring vancomycin and aminoglycoside antibiotics.

PYPD 9490 INTRODUCTION TO PHARMACOGENOMICS (1) LEC. 1. Pr. (PYPD 9230). This College of Pharmacy elective course will introduce pharmacy students to genetic variation and how this impacts efficacy and adverse effects associated with pharmacotherapy within a variety of disease states.

PYPD 9500 AMBULATORY CARE ANTICOAGULATION (1) LEC. 1. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. This course will provide students with a working knowledge of pharmacotherapeutic issues related to anticoagulation therapy in the out-patient setting including an introduction to the various roles of pharmacists in the management of anticoagulation therapy.

PYPD 9510 EXPLORING DIABETES CARE FROM THE PATIENT PERSPECTIVE (1) LEC. 2.1. Pr. (PYPD 9200 or PYPD 9206 and PYPD 9210 or PYPD 9216) and (PYPD 9220 or PYPD 9226 and PYPD 9230 or PYPD 9236). or permission of the Associate Dean for Academic and Student Affairs. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. Students will learn from pharmacists who specialize in diabetes to discuss pivotal literature sources and their impact on patient care. Students will gain appreciation of Standards of Care through active participation in a weekly deconstructed “diabetes experience” documented with reflective individual writings and/or group video recordings.

PYPD 9520 DRUGS OF ABUSE AND MISUSE (1) LEC. 1. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. This course will provide students with a working knowledge of the current trends in drugs of abuse, the public health implications from abuse of these drugs, and the role of different community stakeholders in the fight against this epidemic.

PYPD 9530 RESEARCH METHODS IN HEALTH SERVICES I (1) LEC. 12.5. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. The course is designed to provide a comprehensive introduction to the primary research methods used in clinical and health services research. It will focus on an introduction to various research designs including experimental and non-experimental, as well as quantitative and qualitative research methods. This course is ideal for student pharmacists and graduate students who want to acquire research knowledge and skills enabling them to participate in clinical and translational research teams and to evaluate programs/services at their clinical/pharmacy sites. It will serve as a research resource for their future research projects.

PYPD 9540 RESEARCH METHODS IN HEALTH SERVICES II (1) LEC. 12.5. PYPD 9530 or enrolled in PYPD 9530 during the same semester. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. This course is ideal for student pharmacists and graduate students who want to acquire research knowledge and skills enabling them to participate in clinical and translational research teams and to evaluate programs/services at their clinical/pharmacy sites. It will serve as a research resource for their future research projects.

PYPD 9550 ACUTE CARE PHARMACOTHERAPY I (1) LEC. 1. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. This course is designed to orient the pharmacy student to the acute care environment and familiarize the student with patient disease states and pharmacotherapy issues associated with the acutely ill patient in an inpatient setting.

PYPD 9560 ACUTE CARE PHARMACOTHERAPY II (1) LEC. 2. This course is a continuation of PYPD 9550. The course will cover more disease states and pharmacotherapy issues related to patients in an inpatient setting. Additionally, there will be more focus on special populations along with dosing medications in organ dysfunction.

PYPD 9570 HISTORY OF PHARMACY (1) LEC. 1. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. History influences nearly everything we do and that is certainly the case for the profession of pharmacy. Every course taught can provide historical contexts for the information and application. A general course in pharmacy history can give a firm foundation for any student and graduate to fully embrace their chosen profession, understand its beginnings and development, and be a competent practitioner. The intent of this course is to provide that background so that the student has an appreciation for what has come before and an understanding of the many symbols and advances of the profession that surround any pharmacy practitioner. This ranges from the Rx to the patient counseling booth to the pharmacokinetic consult.

PYPD 9580 PALLIATIVE CARE AND END OF LIFE (1) LEC. 1. Students will be introduced to the pharmacist’s role in hospice/palliative care and symptoms experienced by the dying with an emphasis on interdisciplinary care. Students will also examine the impact of multicultural aspects of providing care in palliative and hospice care.

PYPD 9590 ADVANCED TRAINING IN DIABETES CARE FROM THE PROVIDER'S PERSPECTIVE (1) LEC. 1. Pr. (PYPD 9200 or PYPD 9206) and (PYPD 9210 or PYPD 9216) and (PYPD 9220 or PYPD 9226) and (PYPD 9230 or PYPD 9236) and (PYPD 9240 or PYPD 9246) and (PYPD 9250 or PYPD 9256) and (PYPD 9260 or PYPD 9266) and (PYPD 9270 or PYPD 9276). Course will emphasize completion of necessary steps for achieving The Pharmacist and Patient-Centered Diabetes Care certificate by the American Pharmacists Association, which will include but is not limited to: small group exercises, class discussions, simulated patient counseling (medication, lifestyle and devices). Permission of the Associate Dean for Academic Programs may be needed.

PYPD 9600 ADVANCED PHARMACY PRACTICE EXPERIENCE (5) PRA. Pr. (PYPD 9310 or PYPD 9316). Advanced pharmacy practice experiences in Acute Care/General Medicine, Ambulatory Care/Primary Care, Community Pharmacy, Drug Information, and various other pharmacy practice settings. Course may be repeated for a maximum of 45 credit hours.

PYPD 9610 COMMUNITY PHARMACEUTICAL CARE (5) PRA. 62.5. Advanced Practice Experience in a community pharmacy practice setting that provides pharmaceutical care services such as disease management and other advanced patient care activities. Fall, Spring, Summer.

PYPD 9620 MEDICINE I (5) PRA. 62.5. Advanced practice experience in providing Inpatient Pharmaceutical Care. Fall, Spring, Summer.

PYPD 9630 MEDICINE II - SELECTIVE (5) PRA. 62.5. Advanced practice experience in providing Inpatient Pharmaceutical Care. Additional experience beyond PYDI 9620. Fall, Spring, Summer.

PYPD 9640 PRIMARY/AMBULATORY CARE I (5) PRA. 62.5. Advanced practice experience in providing care to patients as they initially access the health care system. Fall, Spring, Summer.

PYPD 9650 PRIMARY/AMBULATORY CARE II (5) IND/PR1. 62.5. This culminating course will require a comprehensive review and application of knowledge gained throughout the first 3 years of the PharmD Curriculum. Through case, problem and project based learning, learners will apply didactic and clinical knowledge/skills in a self-directed manner.

PYPD 9660 HEALTH SYSTEM PRACTICE (5) PRA. 62.5. Advanced practice experience in a health system setting that prepares the student to adapt and function within systems of integrated pharmaceutical care services. Fall, Spring, Summer.

PYPD 9670 PRACTICE ELECTIVE I (5) PRA. 62.5. Elective experience in an advanced practice experience setting in which the student establishes personal learning goals and responsibilities. Fall, Spring, Summer.

PYPD 9680 PRACTICE ELECTIVE II (5) PRA. 62.5. Elective experience in an advanced practice experience setting in which the student establishes personal learning goals and responsibilities. Fall, Spring, Summer.

PYPD 9690 DRUG INFORMATION-SELECTIVE (5) PRA. 62.5. Status of a 4th Year Doctor of Pharmacy Student (P4) or Permission of the Associate Dean for Academic and Student Affairs. Advanced practice experience in providing drug information services to health care providers. Fall, Spring, Summer.

PYPD 9700 SUMMATIVE EXPERIENCE I (3) IND. 37.5. SU. The P4 Summative Experience I is an independent study course focusing on the North American Pharmacist Licensure Examination (NAPLEX) preparation utilizing the RxPrep package. Students will work longitudinally to complete study modules based on an assigned schedule with each module culminating in a cumulative assessment. Course requirements are to be completed outside of Advanced Pharmacy Practice (APPE) rotation requirements.

PYPD 9710 COMMUNITY PHARMACY PRACTICE I (1) LEC. 12.5. Currently enrolled in the Doctor of Pharmacy program or permission of the Associate Dean for Academic and Student Affairs. This course will focus on legal and business aspects of community pharmacy practice. Students will be paired with a mentor for this course who will provide real world examples of these aspects of community pharmacy.

PYPD 9720 COMMUNITY PHARMACY PRACTICE II (1) LEC. 1. This course will focus on the development and implementation of clinical services within the community pharmacy setting. Students will receive training on concept development through implementation of medication therapy management services in this setting.

PYPD 9730 INFECTIOUS DISEASES I (1) LEC. 1. This course will provide the student with an in depth exposure to the treatment of bacterial infectious diseases, with a particular focus on antimicrobial stewardship and the treatment of multidrug-resistant organisms.

PYPD 9740 INFECTIOUS DISEASES II (1) LEC. 1. This course will provide the student with an in depth exposure to the treatment of different viral, fungal, and bacterial infectious diseases not covered in depth in other portions of the curriculum. Admission into the Doctor of Pharmacy program or permission of the Associate Dean for Academic Programs

PYPD 9750 ADVANCED MOTIVATIONAL INTERVIEWING (1) LEC. 1. Motivational interviewing (MI) is an evidence-based method for facilitating voluntary health behavior change with patients and with providers. Target behaviors for patients engaged in comprehensive disease management may include outcome enhancing behaviors like medication taking, healthy eating, monitoring, physical activity, sleep management, smoking cessation, among others. This course will 1) explore the conceptual basis for why motivational interviewing is effective in facilitating health behavior change, and 2) provide basic and advanced training and practice for using motivational interviewing to help patients with self-management of their health conditions. This course is intended and designed to support and build student self-efficacy for using MI in patient encounters within a health/disease management context. MI principles and micro skills will be applied by the instructor in the process of helping facilitate student learning. It is hoped that the student will come away from the course encouraged, not discouraged, about using MI for improved patient outcomes in future practice/research.

PYPD 9760 POST-GRADUATE TRAINING PREPARATION (1) LEC. 1. This course will review post-graduate education opportunities for pharmacists with a focus on pharmacy residency training. Students will learn about post-graduate opportunities within pharmacy and develop skills and tools necessary in securing a position after graduation.

PYPD 9770 ACUTE CARE ANTITHROMBOTIC (1) LEC. 1. This course will provide students with a working knowledge of pharmacotherapeutic issues related to antithrombotic therapy in the inpatient setting including an introduction to roles and responsibilities of pharmacists in the management of antithrombotic therapy in this setting. Admission into the Doctor of Pharmacy program or permission of the Associate Dean for Academic Programs.

PYPD 9780 TOXICOLOGY AND POISONS (1) LEC. 1. Toxicology is the science of poisons and their antidotes. Almost any substance has the ability to cause noxious effects on living beings. The Toxicology and Poisons course is designed to introduce the Doctor of Pharmacy student to the role of the pharmacist in the management of poisonous substances and intentional and unintentional drug overdoses. Admission into the Doctor of Pharmacy program or permission of the Associate Dean for Academic Program.

PYPD 9790 THERAPEUTIC USE OF OPIOIDS (1) LEC. 1. Opioids as a class of medications are a high risk class of medications. As such, it is important that pharmacists learn to be systematic in their approach to dosing these medications and to recognize common mistakes made in their dosing. This course will provide an in-depth approach to dosing these medications. Each week will focus on a different area of dosing using patient cases to allow students to practice calculations and making recommendations. Status as a 3rd year student in the Doctor of Pharmacy program or permission of the Associate Dean of Academic Programs.

PYPD 9800 SUMMATIVE EXPERIENCE II (3) IND. 3. SU. Pr. PYPD 9700. The P4 Summative Experience II contains both an independent study component focusing on North American Pharmacist Licensure Examination (NAPLEX) board exam and Multistate Pharmacy Jurisprudence Examination (MPJE) preparation utilizing the RxPrep package and supplemental materials as well as the completion of various assignments during the course of Advanced Pharmacy Practice Experiences (APPE) rotations. Course requirements are adjunctive to APPE rotation requirements. Status of a 4th Year Doctor of Pharmacy Student (P4) or permission of the Associate Dean for Academic Programs.

PYPD 9810 ADVANCED PEDIATRICS (1) LEC. 1. The purpose of this course is to expose students to advanced pediatric topics regarding disease states, therapeutics (acute and chronic therapy) and pharmacogenomics. Concepts from the Introduction to Pediatrics course will be incorporated. Admission into the Doctor of Pharmacy program or permission of the Associate Dean for Academic Programs.

PYPD 9830 ACUTE CARE SELECTIVE II (5) LEC. 5. Advanced practice experience in providing pharmaceutical care to patients in an additional acute care setting. General medicine (acute care) experiences provide comprehensive, evidence-based, individualized, patient-centered care to adult inpatients typically located on a general medicine floor. Pharmacists are expected to be accountable for the patient's drug therapy outcomes and practice as an integrated member of the inter-professional health care team. Typical patients present with the following medical problems: cardiac, pulmonary, renal, hepatic, neurologic, gastrointestinal, endocrine and infectious diseases. The experience incorporates all elements of care from medication reconciliation, medication therapy recommendations and monitoring, discharge counseling, and transitions of care. Doctor or Pharmacy program or permission of the Associate Dean for Academic Programs

PYPD 9840 CLINICAL ISSUES IN UNDERSERVED POPULATIONS (1) LEC. 1. This course focuses on addressing barriers patients vulnerable to health disparities face in our healthcare system. Students will expand knowledge of social determinants of health, available medication resources, and clinical strategies to reduce health disparities in the primary care setting. Enrollment in the Doctor of Pharmacy Program or approval of the Associate Dean for Academic Programs.

PYPD 9850 PRIMARY CARE SELECTIVE II (5) LEC. 5. Advanced practice experience in providing pharmaceutical care to patients as they initially access the health care system. This is an additional opportunity for students to train in a primary care care setting. Primary care experiences provide evidence-based, patient-centered collaborative care in the outpatient setting to meet the medication management needs of patients in the treatment of chronic disease. These pharmacists promote health and wellness, disease prevention and education, and medication management of chronic illnesses such as diabetes, hypertension, coronary artery disease / dyslipidemia, asthma / chronic obstructive pulmonary disease, and heart failure. Other chronic diseases encountered by the ambulatory care pharmacist may include chronic kidney disease, chronic infectious diseases, and other chronic diseases responsive to infusion therapy that do not require hospitalization. Pharmacist delivered ambulatory care occurs in institutional health system-based clinics, community-based clinics, government-funded clinics, and managed care organizations as well as the community pharmacy setting where comparable care is provided. 4th year Doctor of Pharmacy Students or the permission of the Associate Dean for Academic Programs

PYPD 9860 METABOLIC SYNDROME 1 (1) LEC. 1. Metabolic Syndrome 1 will focus on the assessment and treatment (nonpharmacologic and pharmacologic) of disease states related to metabolic syndrome, including prevention of these comorbidities. Special attention will be given to patient considerations in the management of these diseases. Enrollment in the Doctor of Pharmacy Program or Approval of the Associate Dean for Academic Programs.

PYPD 9870 METABOLIC SYNDROME 2 (1) LEC. 1. Metabolic Syndrome 2 will focus on the assessment and treatment (nonpharmacologic and pharmacologic) of disease states related to metabolic syndrome with special attention given to its management of unique patient populations. In addition, considerations for communication with other healthcare providers will be addressed. Enrollment in the Doctor of Pharmacy Program or approval of the Associate Dean for Academic Programs.

PYPD 9880 CARDIOLOGY (1) LEC. 1. Pr. PYPD 9230. This course will introduce and expand upon core cardiovascular disease states essential for the practice ready pharmacist. HCOP students will utilize evidence-based medicine to guide all pharmacotherapy discussions and gain experience in applying these principles to make patient care decisions.

PYPD 9890 CONSULTANT PHARMACY: AN EXPANDING AREA OF PRACTICE (1) LEC. 1. Pr. PYPD 9230. Consultant pharmacy is an expanding area of practice. Consultant pharmacists collaborate with the healthcare team to provide expert clinical guidance to promote safe and effective drug therapy for older adult patients and to ensure compliance with state and federal regulations. This course will introduce HCOP students to the field of consultant pharmacy.

PYPD 9900 THE NUTRITION KITCHEN, AN INTERDISCIPLINARY CULINARY MEDICINE ELECTIVE (PHARMACY) (1) LEC. 1. SU. Pr. (PYPD 9230). The Nutrition Kitchen is an interdisciplinary culinary medicine elective to prepare future healthcare professionals utilizing a food-forward approach in the care of patients with nutrition-related chronic diseases. This specific course is for Doctor of Pharmacy students in the Harrison College of Pharmacy.

PYPD 9910 ANTIMICROBIAL STEWARDSHIP (1) LEC. 1. Pr. PYPD 9230. This HCOP elective course will explore the principles of antimicrobial stewardship and avenues for pharmacists to engage in antimicrobial stewardship efforts in a variety of patient care settings. Through simulated activities, pharmacy students will gain experience learning, recommending, and communicating antimicrobial stewardship interventions.

PYPD 9920 PHARMACY-BASED POINT-OF-CARE TEST AND TREAT (1) LEC. 1. SU. Pr. PYPD 9230. This course provides pharmacy students with knowledge and skills to develop and implement collaborative point-of-care testing programs. This HCOP elective will discuss the point-of-care test and treat process, including specimen collection, legal and management issues associated with point-of-care testing and follow-up care, and assessment of patients to determine if point-of-care testing is appropriate.

PYPD 9930 PRINCIPLES OF FUNCTIONAL MEDICINE 2 – A PATIENT CENTERED APPROACH (1) LEC. 1. Pr. (PYPD 9470). HCOP students will use the principles from the Functional Medicine course and the pharmacist's role in chronic disease state management to approach patient care using nutritional and lifestyle interventions to help prevent, heal, and potentially reverse disease. Students will continue to examine the impact of holistic healing as a path to overall health and wellness through investigation of their own health and wellness.

PYPD 9940 VETERINARY PHARMACY I (1) LEC. 1. Pr. (PYPD 9230). The purpose of this course is to introduce HCOP students to the practice of veterinary pharmacy. Veterinary-specific laws and regulations will be discussed, including special requirements for veterinary prescriptions. Species differences in pharmacokinetics, pharmacodynamics, and pharmacogenomics will be discussed, along with common disease states and pharmacologic treatments.

PYPD 9950 VETERINARY PHARMACY II (1) LEC. 1. Pr. (PYPD 9940). The purpose of this course is to expand HCOP students' knowledge of the practice of veterinary pharmacy. Large and exotic animal pharmacy will be discussed, along with pharmacological treatments.

PYPD 9980 PHARMACY RESEARCH (1-3) LEC. 1-3. The student will be expected to learn to conduct independent research activity. The specific research topic will lie within the scope of the School of Pharmacy writ large and will be decided by the student's faculty research advisor. Course may be repeated for a maximum of 6 credit hours.