

DOCTOR OF PHARMACY DEGREE AND CURRICULUM

Educational Outcomes for Pharmacy Graduates

Creighton University pharmacy graduates will be practice-ready; equipped with the knowledge, skills, attitudes, attributes and values necessary to provide evidence-based, collaborative, and ethical patient-centered care. Graduates will obtain the foundational knowledge and experience needed to become innovative leaders, as well as pharmacists who exhibit professionalism, self-awareness and entrepreneurship. Graduates will possess the abilities to be reflective practitioners educated in the Ignatian tradition, will be capable of maximizing medication outcomes and patient wellbeing and will be able to provide service to persons and the community in harmony with the law. In this regard, graduates must demonstrate competence in the following areas/

Educational Outcome

The graduate will...

- Demonstrate and apply the foundational knowledge of contemporary pharmacy practice to achieve optimal health outcomes.
- Provide comprehensive patient-centered care.
- Utilize human, financial, technological, physical and policy resources to optimize the safety and efficacy of medication use systems.
- Apply critical thinking skills to support evidence-based pharmacy practice and research.
- Educate, advocate, and collaborate utilizing effective and professional communication.
- Demonstrate personal and professional attributes of an ethical, reflective, and responsible practitioner in the Ignatian Tradition.
- Contribute to the profession and society by demonstrating professionalism, leadership, innovation, and entrepreneurship.

OMAHA AND PHOENIX Pathways

The Omaha and Phoenix Pathways to the Doctor of Pharmacy degree require nine semesters of professional course work (thirteen semesters including the two years of pre-pharmacy courses). Students are required to attend rotations during the summer prior to the last year of the program. A full semester of tuition is charged for the summer rotation experience.

Doctor of Pharmacy Curriculum (Pharm.D.)

Course	Title	Credits
First Professional Year		
Fall		
IPE 500	Introduction to Collaborative Care	0
OTD 215	Medical Terminology	1
PHA 301	Principles of Biochemistry for Pharmacy	3

PHA 312	Professional Development and Experience I	1.5
PHA 313	Calculations in Pharmacy Practice	2
PHA 317	Pharmaceutics I: Physiochemical Principles of Drugs	3
PHA 320	Communication Skills	2
PHA 359	Dispensing and Patient Care I	3
Term Credits		15.5

Spring

BMS 404	Human Physiology	3
MIC 541	Medical Microbiology and Immunology	3
PHA 314	Professional Development and Experience II	1.5
PHA 321	Health Systems and Patient Safety	3
PHA 339	Pharmaceutics II - Pharmaceutical Dosage Forms and Drug Delivery Systems	3
PHA 443	Basic Pharmacokinetics	2
PHA 470	Pharmacy-Based Immunization Delivery	1
Term Credits		16.5

Second Professional Year

Fall

PHR 241	Pharmacology I	4.5
PHA 326	Patient Assessment	2
PHA 333	Introductory Pharmacy Practice Experience II ¹	3
PHA 337	The Chemical Basis of Drug Action I	2.5
PHA 413	Pharmacotherapeutics I: Focus on Nonprescription Products & Self-Care	5
Term Credits		17

Spring

PHR 242	Pharmacology II	4.5
PHA 338	Professional Development Seminar III	1
PHA 414	Pharmacotherapeutics II	6
PHA 424	Pharmacotherapeutics II Case Studies	1
PHA 447	Chemical Basis of Drug Action II	2.5

PHA 469	Dispensing and Patient Care II	2
Term Credits		17

Third Professional Year**Fall**

PHA 350	Introduction to Research Methods and Biostatistics	2
PHA 351	Foundations of Public Health	2
PHA 415	Pharmacotherapeutics III	6
PHA 425	Pharmacotherapeutics III Case Studies	1
PHA 430	Immunopharmacology and Biotechnology	2
PHA 433	Introductory Pharmacy Practice Experience III ¹	3
PHA 442	Pharmacy Practice Management	3
Term Credits		19

Spring

PHA 416	Pharmacotherapeutics IV	6
PHA 426	Pharmacotherapeutics IV Case Studies	1
PHA 448	Professional Development Seminar IV	1
PHA 454	Pharmacy Practice Law	3
PHA 456	Ethics in the Health Care Professions	3
PHA 458	Literature Evaluation and Evidence-Based Practice	3
PHA 489	Dispensing and Patient Care III	2
Term Credits		19

Summer

PHA 434	Introductory Pharmacy Practice Experience IV	1
Rotations (2)		10
Term Credits		11

Fourth Professional Year**Fall**

PHA 421	Delivering Medication Therapy Management Services	1
Rotations (3)		15
Term Credits		16

Spring

Rotations (3)		15
---------------	--	----

Professional Electives ²	4
Term Credits	19
Total Credits	150

¹ Taken the preceding Summer² See "Elective Requirements".

Distance Pathway

The distance pathway for the Doctor of Pharmacy degree requires nine semesters of professional course work (thirteen semesters including the two years of pre-pharmacy courses). The courses covered in this pathway are the same as in the campus pathway, however, the laboratory component of some courses are completed during required summer sessions. Students are required to be on campus for an estimated two to three weeks each summer to take the laboratory courses in a condensed manner. As with the campus pathway, students are required to attend rotations during the summer prior to the last year of the program. The tuition for the distance pathway is assessed identically to the campus program. The overall tuition and fees are nearly identical for the total program, regardless of the pathway.

Doctor of Pharmacy Curriculum (Pharm.D.)

Course	Title	Credits
First Professional Year		
Fall		
IPE 500	Introduction to Collaborative Care	0
OTD 215	Medical Terminology	1
PHA 301	Principles of Biochemistry for Pharmacy	3
PHA 312	Professional Development and Experience I	1.5
PHA 313	Calculations in Pharmacy Practice	2
PHA 317	Pharmaceutics I: Physiochemical Principles of Drugs	3
PHA 320	Communication Skills	2
PHA 359	Dispensing and Patient Care I	3
Term Credits		15.5
Spring		
MIC 541	Medical Microbiology and Immunology	3
PHA 404	Human Physiology	3
PHA 443	Basic Pharmacokinetics	2
PHA 314	Professional Development and Experience II	1.5
PHA 321	Health Systems and Patient Safety	3

PHA 339	Pharmaceutics II - Pharmaceutical Dosage Forms and Drug Delivery Systems	3
PHA 470	Pharmacy-Based Immunization Delivery	1
Term Credits		16.5

Second Professional Year

Fall

PHR 241	Pharmacology I	4.5
PHA 326	Patient Assessment	2
PHA 333	Introductory Pharmacy Practice Experience II ¹	3
PHA 337	The Chemical Basis of Drug Action I	2.5
PHA 413	Pharmacotherapeutics I: Focus on Nonprescription Products & Self-Care	5
Term Credits		17

Spring

PHR 242	Pharmacology II	4.5
PHA 338	Professional Development Seminar III	1
PHA 414	Pharmacotherapeutics II	6
PHA 424	Pharmacotherapeutics II Case Studies	1
PHA 447	Chemical Basis of Drug Action II	2.5
PHA 469	Dispensing and Patient Care II ²	2
Term Credits		17

Third Professional Year

Fall

PHA 350	Introduction to Research Methods and Biostatistics	2
PHA 351	Foundations of Public Health	2
PHA 415	Pharmacotherapeutics III	6
PHA 425	Pharmacotherapeutics III Case Studies	1
PHA 430	Immunopharmacology and Biotechnology	2
PHA 433	Introductory Pharmacy Practice Experience III ¹	3
PHA 442	Pharmacy Practice Management	3
Term Credits		19

Spring

PHA 416	Pharmacotherapeutics IV	6
---------	----------------------------	---

PHA 426	Pharmacotherapeutics IV Case Studies	1
PHA 448	Professional Development Seminar IV	1
PHA 454	Pharmacy Practice Law	3
PHA 456	Ethics in the Health Care Professions	3
PHA 458	Literature Evaluation and Evidence-Based Practice	3
PHA 489	Dispensing and Patient Care III ²	2

Term Credits 19

Summer

PHA 434	Introductory Pharmacy Practice Experience IV	1
---------	---	---

Rotations (2) 10

Term Credits 11

Fourth Professional Year

Fall

PHA 421	Delivering Medication Therapy Management Services	1
---------	---	---

Rotations (3) 15

Term Credits 16

Spring

Rotations (3) 15

Professional Electives ³ 4

Term Credits 19

Total Credits 150

¹ Course taken in preceding summer semester.

² Course taken the following summer.

³ See "Elective Requirements".

Elective Requirements

Within the first six semesters of the program, a total of four (4) professional elective hours must be successfully completed. These electives will relate to the practice of pharmacy (e.g., PHA, IPE) or meet the needs of individual dual tracks (e.g., Master of Business Administration and Master of Science in Pharmaceutical Sciences). For courses not meeting these criteria or courses taken outside Creighton University (transient study), a pre-approval process will be conducted by the Assistant/Associate Dean for Academic Affairs. Non-Creighton courses must be taken at a four year institution. Students will not progress to rotations in the last three semesters of the program until these requirements are met.

Elective courses must be taken for a grade unless the instructor has elected to use the Satisfactory/Unsatisfactory grading system. The Pass/No Pass option is not allowed for courses that will be applied toward the degree.

Rotation Requirements

In the last three semesters of the program, five credits are given for each five-week rotation experience. Five rotations are required:

Code	Title	Credits
PHA 510	Community Advanced Pharmacy Practice Experience	5
PHA 511	Hospital Advanced Pharmacy Practice Experience	5
PHA 512	Acute Care Advanced Pharmacy Practice Experience	5
PHA 515 or PHA 534	Drug Information Advanced Pharmacy Practice Experience Medication Therapy Management (MTM) Advanced Pharmacy Practice Experience	5
PHA 516	Ambulatory Care Advanced Pharmacy Practice Experience	5

The remaining three (3) rotations are elective but must be selected so as to provide a variety of professional experiences. Students are encouraged to enroll in rotations that will expose them to direct patient contact and clinical service, distributive functions, and nontraditional practices. The experiential year has been designed to graduate a generalist practitioner who is highly qualified to enter practice or pursue advanced study in the clinical, administrative, or basic pharmaceutical sciences. The elective rotations available to Pharm.D. students currently include:

Code	Title	Credits
PHA 520	Elective Community Advanced Pharmacy Practice Experience	5
PHA 521	Community Management Advanced Pharmacy Practice Experience	5
PHA 522	Advanced Community Advanced Pharmacy Practice Experience	5
PHA 523	Long Term Care Advanced Pharmacy Practice Experience	5
PHA 524	Elective Ambulatory Care Advanced Pharmacy Practice Experience	5
PHA 525	Informatics Advanced Pharmacy Practice Experience	5
PHA 526	Home Infusion Advanced Pharmacy Practice Experience	5
PHA 527	Compounding Advanced Pharmacy Practice Experience	5
PHA 528	Institute For Latin American Concerns (ILAC) Advanced Pharmacy Practice Experience	5
PHA 529	International Advanced Pharmacy Practice Experience	5
PHA 530	Emergency Medicine Advanced Pharmacy Practice Experience	5
PHA 531	Medication Safety Advanced Pharmacy Practice Experience	5
PHA 533	Organization Management Advanced Pharmacy Practice Experience	5
PHA 534	Medication Therapy Management (MTM) Advanced Pharmacy Practice Experience	5
PHA 535	Academic Advanced Pharmacy Practice Experience	5

PHA 538	Managed Care Advanced Pharmacy Practice Experience	5
PHA 540	Elective Hospital Advanced Pharmacy Practice Experience	5
PHA 541	Hospital Management Advanced Pharmacy Practice Experience	5
PHA 542	Elective Drug Information Advanced Pharmacy Practice Experience	5
PHA 543	Poison Center Advanced Pharmacy Practice Experience	5
PHA 545	Nuclear Medicine Advanced Pharmacy Practice Experience	5
PHA 546	Veterinary Advanced Pharmacy Practice Experience	5
PHA 550	Industry Advanced Pharmacy Practice Experience	5
PHA 551	Research Advanced Pharmacy Practice Experience	5
PHA 560	Elective Acute Care Advanced Pharmacy Practice Experience	5
PHA 563	Infectious Disease Advanced Pharmacy Practice Experience	5
PHA 566	Oncology Advanced Pharmacy Practice	5
PHA 568	Critical Care Advanced Pharmacy Practice Experience	5
PHA 569	Cardiology Advanced Pharmacy Practice Experience	5
PHA 570	Psychiatry Advanced Pharmacy Practice Experience	5
PHA 572	Pediatrics Advanced Pharmacy Practice Experience	5
PHA 573	Nutrition Support Advanced Pharmacy Practice Experience	5
PHA 574	Neurology Advanced Pharmacy Practice Experience	5
PHA 575	Transition of Care Advanced Pharmacy Practice Experience	5

In order to satisfy the requirements for graduation, the Doctor of Pharmacy student must successfully complete:

- all requirements for admission, including a minimum of 63 pre-professional semester hours;
- all required courses in the Pharm.D. curriculum;
- all required elective courses

A cumulative grade-point average of not less than 2.00 is required for graduation, based on all work attempted while enrolled in the pharmacy program.

A candidate for a degree must be determined by the faculty to be of good moral character and fit for the practice of the profession, must have paid all indebtedness to the University, and must be present at the ceremonies where the degree is conferred (unless excused under University rules).

To participate in Commencement a candidate must submit an application for degree from the Registrar's website by the University deadline.

In an effort to comply with accreditation and ongoing programmatic quality assurance, completion of all course evaluations and senior

assessments is required in order for the student to be assigned a course grade and/or graduate.

MIC 541. Medical Microbiology and Immunology. 3 credits. FA

Introductory course focusing on foundations of general bacteriology and virology, antibacterial therapy and mechanisms of antibacterial resistance, infectious diseases caused by bacteria, viruses, fungi, and parasites, and the host defenses against these microorganisms. R, L. P. Second year Pharm.D. student or degree seeking graduate student. Upper level undergraduate or other students require approval from course director.

PHA 213. Human Anatomy for Pre-Pharmacy Students. 3 credits.

Pre-pharmacy students will learn cellular, tissue, organ and system level anatomical structures, with emphasis on using anatomical knowledge as a foundation for pharmacist-provided patient care. P. BIO 202 and BIO 201 or equivalent.

PHA 300. Pharmacogenomics in Disease Management. 2 credits. (Pharmacy Elective Course)

Many patients fail to respond completely to the drugs they are given, and others manifest often severe adverse effects. Obviously, a better fundamental understanding of the nature of genetic predisposition to diseases as well as drug action is essential for future progress in healthcare. Drugs may interact specifically and selectively with the genetic properties of an individual. Pharmacogenomics predicts how an individual's genetic inheritance will affect the body's response to drugs. This course will deal with fundamental concept of pharmacogenomics, its application to disease management and patient care, and future trends. P. BMS 301 or PHA 301.

PHA 301. Principles of Biochemistry for Pharmacy. 3 credits.

This course introduces pharmacy students to the chemistry of biological systems. Key topics include structure of biological macromolecules and their building blocks, function of biochemically important molecules, metabolism for energy storage or construction of biomolecules, and coordinated regulation of metabolism. Examples of drug action with respect to metabolism will be included throughout. P. CHM 323 and CHM 324.

PHA 310. Human Anatomy for Pre-Professionals. 3 credits.

This is a survey course for pre-health professions where students will learn cellular, tissue, organ and system level anatomy, with an emphasis on the application of this knowledge as it relates to the health professions. Structure/function relationships, clinical cases, and anatomical terminology will be emphasized. P. BIO 201 or 202 (both preferred).

PHA 311. Human Anatomy Lab for Pre-Professionals. 1 credit.

This is a lab course that accompanies Human Anatomy for Pre-Professionals, PHA 310, that utilizes web-based histology labs, visits to the gross anatomy lab, demonstrations and models to teach human anatomy as it pertains to healthcare professions. P. BIO 201 or BIO 202 (both preferred); CO: PHA 310.

PHA 312. Professional Development and Experience I. 1.5 credit.

Professional Development and Experience I (PDE I) is the first in a series of four courses to guide students in becoming ethical, reflective, and responsible practitioners in the Ignatian Tradition. In PDE I, students are introduced to professionalism, reflection, self-awareness, self-regulation, and health literacy. Core Ignatian Values are introduced and thoughtful reflection is utilized to increase student self-awareness as the basic foundation for becoming a reflective practitioner. Students will have opportunities for professional growth and development through co-curricular activities. The experiential component introduces students to the pharmacist's role and responsibilities through shadowing and observing pharmacists in community, hospital, and various specialty practice settings.

PHA 313. Calculations in Pharmacy Practice. 2 credits.

This course prepares students to perform calculations as they pertain to the chemical and physical properties of drug substances and pharmaceutical ingredients, prescription preparation, sterile and non-sterile extemporaneous compounding, drug administration, and drug dosing and dosage adjustments based on patient-specific parameters.

PHA 314. Professional Development and Experience II. 1.5 credit.

Professional Development and Experience II (PDE II) is the second in a series of four courses to guide students in becoming an ethical, reflective, and responsible practitioner in the Ignatian Tradition. In PDE II, students are introduced to leadership, innovation, team work, and professional advocacy. Additionally, elements of self-awareness and cultural competency will continue to be developed. Core Ignatian Values are integrated and thoughtful reflection is utilized to increase student self-awareness as the basic foundation for becoming a reflective practitioner. Students will have opportunities for professional growth and development through co-curricular activities. The experiential component introduces students to the pharmacist's role and responsibilities through shadowing and observing pharmacists in community, hospital, and various specialty practice settings. P. PHA 312.

PHA 317. Pharmaceutics I: Physicochemical Principles of Drugs. 3 credits.

This course provides foundation to understand and apply physicochemical concepts to current drug entities as well as future therapeutic agents to obtain better therapeutic outcomes. The concept of solubility and partitioning will be discussed in terms of drug release and its bioavailability. The principles of pharmaceutical sciences involved in drug design and dosage form properties, formulation development and delivery, drug stability and storage, and drug kinetics (absorption, distribution, and excretion) will be introduced.

PHA 320. Communication Skills. 0-2 credits.

The course establishes a framework and demonstrates concepts that are essential for effective communication in pharmacy settings. Emphasis is placed on developing effective, empathic, and assertive communication between pharmacists, patients and interdisciplinary colleagues. Active learning techniques provide an opportunity for practice and feedback.

PHA 321. Health Systems and Patient Safety. 3 credits.

This course examines various structural, economic, service delivery, professional, and patient factors that influence contemporary pharmacy practice in a variety of settings. This course emphasizes development of a culture of best practices in patient safety. This course includes concepts of safe patient care systems in health care delivery as well as public health principles and practices in the context of public responsibility.

PHA 326. Patient Assessment. 2 credits.

This course instructs the student how to methodically obtain and evaluate subjective and objective patient information for all of the body systems. Students learn specific patient interviewing skills and questions in order to appropriately obtain subjective information. Students also learn theoretical and practical aspects of objective patient information including physical examination and clinical laboratory data. Patient case scenarios are utilized to assist students in comparing and contrasting normal from abnormal physiologic functioning and to expose them to patient assessment skills that are commonly used to provide pharmaceutical care. P. MIC 541, OTD 215, PHA 320 and BMS 404 or PHA 404.

PHA 333. Introductory Pharmacy Practice Experience II. 3 credits.

Introductory Pharmacy Practice Experience (IPPE) 2 will provide second-year pharmacy students with a 120 hour (three-week block) experience in a community pharmacy practice setting. Students will actively participate in community pharmacy practice activities such as prescription processing, medication dispensing, communicating with patients and healthcare professionals, as well as working with inventory control procedures. Students will reflect upon the experience during a 1 hour group reflection session led by a pharmacist faculty member after the experience. IPPE 2 will prepare students for future pharmacy practice experiences. P. PHA 314.

PHA 337. The Chemical Basis of Drug Action I. 2.5 credits.

The Chemical Basis of Drug Action emphasizes the relevance of chemistry to contemporary pharmacy practice. The course integrates chemical, biochemical and physiological principles to derive structure-activity relationships for commonly encountered drugs that explain the scientific rationale for their therapeutic use. Active learning strategies are utilized to help learners develop the skills necessary to provide a scientific basis for patient-centered therapeutic decision-making. P. BMS 301 or PHA 301; CO: PHR 241.

PHA 338. Professional Development Seminar III. 1 credit.

Professional Development Seminar III (PDS III) is the third in a series of four courses to guide students in becoming an ethical, reflective, and responsible practitioner in the Ignatian Tradition. In this course students will continue to develop their self-awareness and leadership skills to enhance innovation and team communication as a key component of developing professional behaviors and attitudes. They will also broaden their knowledge and practice of patient advocacy through classroom and co-curricular activities.

PHA 339. Pharmaceutics II - Pharmaceutical Dosage Forms and Drug Delivery Systems. 3 credits.

This course provides an introduction to pharmaceutical dosage forms and drug delivery systems i.e. solid, liquid, semi-solid, aerosol, transdermal, and emerging novel delivery systems. This course will emphasize on development of nanoparticles, biomolecules, application of polymers/ excipients and their calculations and biopharmaceutical aspects. The course will highlight the applications of non-sterile compounding of dosage forms and have a lab component to simulate the theoretical learning with actual compounding practice. P. PHA 317; P or CO: PHA 313 and BMS 404.

PHA 340. Native American Culture and Health. 2 credits. (Pharmacy Elective Course)

This course allows students to learn firsthand about the culture and health care practices of Native Americans by participating in seminars offered by Native tribal and spiritual leaders, healers, and others who work with Native populations in promoting wellness and pride in culture. Students will participate in the course with other SPAHP students enrolling in the elective course PHA 341. P. IC.

PHA 341. Learning Through Reflective Service: Native American Experience. 2 credits. (Pharmacy Course Elective)

This course allows students to learn firsthand about the culture and health care practices of Native Americans through focused, reflective study and professional and community-related service activities. One week of guided on-site experience at a Native American reservation or urban community is preceded by the establishment of learning goals, readings, independent study, group discussion and reflection. Following the service week, students engage in further reflection to make meaning of the experience, present an oral reflection on the lessons learned from the experience and a seminar on their experience to interested Creighton students and faculty, and explore career opportunities in the Public Health Service. P. IC.

PHA 347. Professional Seminar. 1 credit. (Pharmacy Elective Course)

This 1-credit course is designed to assist students in becoming strategic learners. The course will explore strategies or approaches that enable one to better learn, understand and retain what is being taught, and the ways to manage one's time and life in the new environment of professional school. Ideas from educational psychology, cognitive psychology, and various academic disciplines are presented in order to improve students' learning ability in professional school.

PHA 348. Well-Being and Student Success Seminar. 1 credit. (Pharmacy Elective Course)

This course is designed to assist students in developing an awareness of the impact of well-being on their success as students and future healthcare professionals. The course will explore the following aspects of well-being: academic, social, financial, physical, community, and spiritual. These aspects of well-being will be used to assist students in creating a personal, academic, and professional plan for success. This course is open to second and third-year students enrolled in the School of Pharmacy and Health Professions.

PHA 350. Introduction to Research Methods and Biostatistics. 2 credits.

Students will identify and interpret research questions, hypotheses, variables, sampling methods, research designs, as well as, descriptive and inferential statistics. The emphasis is to evaluate and assess the validity and significance of these research components so there is appropriate interpretations of research results. The goal is for students to become critical readers and users of research so they can practice evidence-based pharmacy and contribute to pharmacy's knowledge base. Students will learn to interpret the validity and the statistics of a research report, but will not necessarily learn to conduct research or perform statistical calculations.

PHA 351. Foundations of Public Health. 2 credits.

This course introduces principles and practice of public health, from population and patient care perspectives. Key epidemiologic and public health terminology is covered. Pharmacy applications of core functions and essential services of public health, as well as Healthy People Objectives and Global Goals for Sustainable Development, are addressed. Partnership opportunities in collective efforts to optimize public health are explored. P. PHA 321.

PHA 359. Dispensing and Patient Care I. 3 credits.

Dispensing and Patient Care I covers a wide range of topics related to pharmacy practice. These include an introduction to drug information resources, sterile compounding, prescription processing and dispensing, patient encounters and counseling, communication, patient safety, and other pharmacy practice related issues. Students are prepared to apply knowledge and skills in both community and institutional settings with a focus on patient care.

PHA 362. Ocular Pharmacology and Therapeutics. 1 credit. (Pharmacy Elective Course)

This course will provide an overview of basic concepts of physiology, biochemistry and anatomy of the eye to facilitate an understanding of the etiology and pharmacological management of various ocular diseases. The following ophthalmic disorders will be covered: glaucoma, Dry Eye Syndrome, cataract, diabetic retinopathy and age-related macular degeneration. This course is open to P1 through P3 students in both the campus and distance pathways.

PHA 363. Introduction to Pharmaceutical Materials Sciences. 1 credit. (Pharmacy Elective Course)

This course provides an introduction to the excipients or inactive ingredients involved in pharmaceutical preparations. The physicochemical, toxicologic, and regulatory properties of common excipients will be discussed. In addition, the functional roles of common pharmaceutical excipients will be discussed. P. PHA 317 and PHA 339.

PHA 375. Introduction to Online Information Retrieval. 1 credit. (Pharmacy Elective Course)

An in-depth introduction to information retrieval from the major bibliographic health science databases including Medline, Embase, and IPA. The student will develop a proficiency with the mechanics of searching, learn strategies for solving a variety of search problems, and develop an understanding of the strengths and weaknesses of the various databases.

PHA 377. Addiction, Alcoholism and Other Substance Abuse Disorders. 2 credits. (Pharmacy Elective Course)

A study of alcoholism and other substance-related disorders, including etiology, addiction, prevention, and treatments. Special emphasis is given to the disease concept of these disorders, intervention techniques, 12-step programs, dysfunctional families, codependence, adult children, policies relating to impaired professionals, and the impact of alcohol and drug use on society.

PHA 381. Health Informatics. 2 credits. (Pharmacy Elective Course)

This course is designed to provide students with an overview of health technologies currently being used in health care practice, with a focus on their use and impact on care delivery. This includes improvements in safety, quality, and efficiency of care, as well as, negative consequences resulting from increased complexity of health care. This course also presents a national look at the focus on health information technologies and addresses future informatics needs in health care.

PHA 388. Integrative Medicine. 2 credits. (Pharmacy Elective Course)

Evidence-based principles will be used to explore the integration of complementary and alternative medicine (CAM) and pharmacy practice. Ethical considerations relative to CAM therapies will be discussed. Nutraceutical products utilized in the care of selected patient populations will be investigated. Students will be given the opportunity to participate in making a lifestyle change using some of the techniques and activities associated with course topics and activities.

PHA 393. APhA Institute on Substance Use Disorders. 2 credits.

This course is open only to students who attend the APhA Institute on SUDs. The Institute addresses the causes of addiction as it relates to alcoholism and illicit drugs including prevention and treatment strategies. Special emphasis is given to the disease concept of these disorders, morbidity and mortality, 12-step programs, and the impact of alcohol and illicit drug use on society. Students will learn how to provide appropriate assistance and support to patients affected by substance use disorders. Prerequisite: Enrollment in the American Pharmacists Association Institute on Substance Use Disorders and instructor approval.

PHA 397. Directed Study. 0-6 credits. (Elective)

An opportunity for motivated students to become involved in a research project or topic study under the direction and guidance of a faculty member. This study may be in any area of pharmacy practice. A maximum of six semester hours may be taken. Graded Satisfactory/Unsatisfactory. P. IC.

PHA 399. Directed Independent Research I. 1-6 credits. (Elective)

This course provides students with the opportunity to become involved in a research project under the guidance of a faculty member. The course is repeatable to a maximum of six hours.

PHA 403. Cultural Proficiency for Health Care Professionals I. 2 credits. (Elective)

This course addresses the need for cultural proficiency for health care professionals. The course provides the students an opportunity to explore the cultural factors that influences their own interaction with the health care system in the United States and with health care providers. The course also addresses how a patient's cultural beliefs, values, practices, religion and language affect the relationship with healthcare providers. Further, this course will provide several activities on how to utilize this knowledge to develop awareness and respect for other cultures in order to implement a culturally proficient care plan. P. IPE 500.

PHA 404. Human Physiology. 3 credits.

This course is designed to provide pharmacy students with a basic knowledge of human physiology. The function of the major organ systems is covered in a series of lectures and discussions. This course is required for PH1 students both on campus and online.

PHA 410. Third World Cultures and Health Care (ILAC Service). 3 credits. (Elective)

This service course allows students to learn about the culture and health care practices of a third world country through professional and community-related service activities. The 5-6 week summer service experience during the months of June and July in the Institute for Latin American Concern (ILAC) Summer Program has a major focus on the team approach to episodic health-care problems. This unique experience affords the student the opportunity to participate in the inter-disciplinary assessment, planning, implementation and evaluation of health care delivery and education in a Third World country, under the direction of faculty. Students present an oral reflection on the lessons learned from the experience and a seminar on their experience to interested Creighton students and faculty. The student has to apply and be accepted to the ILAC Summer Program. There are informational meetings about the ILAC Summer Program each year during the fall semester (September/October). Interested students must submit an application to the ILAC Omaha Office by November 1st for the following summer program. An interview is scheduled and accepted participants are notified electronically before Thanksgiving break. Pharmacy students will be competing for the 18-24 'ayudante' (helper) positions with students from other colleges, universities, and professionals. P. OTD 330 or equivalent Application and acceptance to ILAC Summer Program.

PHA 413. Pharmacotherapeutics I: Focus on Nonprescription Products & Self-Care. 5 credits.

This course provides instruction on the pharmacotherapeutic management of medical disorders that can primarily be treated utilizing nonprescription medications and nutraceutical products. The students will be taught how to assess a patient's current health status to determine if they are a candidate for self-care. Foundational concepts of pathophysiology relative to nonprescription products are also presented. Students are expected to assess patients, make therapeutic recommendations and provide the appropriate counseling information to ensure safe and effective use of the recommended products. P. MIC 541, PHA 339, PHA 443 and BMS 404 or PHA 404.

PHA 414. Pharmacotherapeutics II. 6 credits.

This course provides in-depth instruction into the pharmacotherapeutic management of major medical diseases with the incorporation of pathophysiologic, pharmacologic and pharmacokinetic principles in a comprehensive medication therapy management model. Emphasis is placed on the efficacy, safety, and cost-effectiveness of drug therapy in pathological disease states affecting all major human organ systems. This course provides the foundation of skills the pharmacist needs to provide appropriate pharmaceutical care to patients. The inclusion of case studies in this course allows the student pharmacist to integrate and apply the didactic knowledge in preparation for the experiential portion of the curriculum. P. PHR 241; PHA 326; PHA 337; PHA 413; PHA 443.

PHA 415. Pharmacotherapeutics III. 6 credits.

This continuation of Pharmacotherapeutics II continues to provide in-depth instruction into the pharmacotherapeutic management of major medical diseases with the incorporation of pathophysiologic, pharmacologic and pharmacokinetic principles in a comprehensive medication therapy management model. Emphasis is placed on the efficacy, safety, and cost effectiveness of drug therapy in pathological disease states affecting all major human organ systems. This course provides the foundation of skills the pharmacist needs to provide appropriate pharmaceutical care to patients. The inclusion of case studies in this course allows the student pharmacist to integrate and apply the didactic knowledge in preparation for the experiential portion of the curriculum. P. PHR 242, PHA 447, and PHA 414.

PHA 416. Pharmacotherapeutics IV. 6 credits.

This continuation of Pharmacotherapeutics III continues to provide in-depth instruction into the pharmacotherapeutic management of major medical diseases with the incorporation of pathophysiologic, pharmacologic and pharmacokinetic principles in a comprehensive Pharmacist's Patient Care Process. Emphasis is placed on the efficacy, safety, and cost effectiveness of drug therapy in pathological disease states affecting all major human organ systems. This course provides the foundation of skills the pharmacist needs to provide appropriate pharmaceutical care to patients. The inclusion of cases in this course allows the student pharmacist to integrate and apply the didactic knowledge in preparation for the experiential portion of the curriculum. P. PHR 242, PHA 447, and PHA 415.

PHA 421. Delivering Medication Therapy Management Services. 1 credit.

This required course is an innovative and interactive certificate training program, through the American Pharmacists Association (APhA), that explores the pharmacist's role in providing Medication Therapy Management (MTM) services to patients. The purpose of this certificate training program is to prepare student pharmacists to improve medication use through the delivery of MTM services. P. PHA 415.

PHA 424. Pharmacotherapeutics II Case Studies. 1 credit.

This course provides practical application of the pharmacotherapeutic management of major medical diseases with the incorporation of pathophysiologic, pharmacologic and pharmacokinetic principles in a comprehensive medication therapy management model. Emphasis is placed on the efficacy, safety, and cost effectiveness of drug therapy in pathological disease states affecting all major human organ systems. This course provides the foundation of skills the pharmacist needs to provide appropriate pharmaceutical care to patients. CO: PHA 414.

PHA 425. Pharmacotherapeutics III Case Studies. 1 credit.

This continuation of Pharmacotherapeutics II case studies course provides practical application of the pharmacotherapeutic management of major medical diseases with the incorporation of pathophysiologic, pharmacologic and pharmacokinetic principles in a comprehensive medication therapy management model. Emphasis is placed on the efficacy, safety, and cost effectiveness of drug therapy in pathological disease states affecting all major human organ systems. This course provides the foundation of skills the pharmacist needs to provide appropriate pharmaceutical care to patients. CO: PHA 415.

PHA 426. Pharmacotherapeutics IV Case Studies. 1 credit.

This continuation of Pharmacotherapeutics III case studies provides practical application of the pharmacotherapeutic management of major medical diseases with the incorporation of pathophysiologic, pharmacologic and pharmacokinetic principles in a comprehensive medication therapy management model. Emphasis is placed on the efficacy, safety, and cost effectiveness of drug therapy in pathological disease states affecting all major human organ systems. This course provides the foundation of skills the pharmacist needs to provide appropriate pharmaceutical care to patients. CO: PHA 416.

PHA 430. Immunopharmacology and Biotechnology. 2 credits.

This is an immunology and biotechnology course designed for pharmacy students. It will emphasize immunology and pharmacology as they relate to the initiation and regulation of immune response. The information will include: the fundamentals of basic and cellular immunology, the physiology, pathology and pharmacology of cytokines, mechanisms of allergic disease, immunologic mechanisms of tissue transplant rejection, immunology of HIV infection and T cell vaccines, pharmacology of immunosuppressive drugs, taxonomy and pharmacology of monoclonal antibodies, and clinical approaches of gene therapy including CAR T cell technology. P. PHR 242.

PHA 433. Introductory Pharmacy Practice Experience III. 3 credits.

Introductory Pharmacy Practice Experience III (IPPE 3) will provide third-year pharmacy students with 120 hours (three-week block or longitudinal) of experience in a hospital pharmacy practice setting. Students will actively participate in hospital pharmacy practice activities such as processing of medication orders, preparing and dispensing of medications, communicating with other healthcare professionals, as well as working with inventory control procedures. Students will also have opportunities for professional growth and development through attending professional meetings, participating in health related service, and reflecting upon their experiences. IPPE 3 will prepare students for future pharmacy practice experiences. Graded Satisfactory/Unsatisfactory. P. PHA 333.

PHA 434. Introductory Pharmacy Practice Experience IV. 1 credit.

Introductory Pharmacy Practice Experience IV (IPPE 4) will provide third-year pharmacy students with 32 hours of experience to further develop clinical skills, including but not limited to the Pharmacist's Patient Care Process and in preparation for Advanced Pharmacy Practice Experiences (APPEs) in their P4 year. Students will actively participate in activities which may include working up patients, presenting patient cases, documenting SOAP notes, conducting medication profile reviews, answering drug information questions, and communicating with other healthcare professionals, while demonstrating appropriate professionalism and communication skills. P. PHA 415, PHA 433.

PHA 440. Postgraduate Training in Pharmacy Practice. 1 credit.

This course offers knowledge about postgraduate training opportunities in pharmacy practice as well as guidance on how to prepare and apply for a pharmacy practice residency. P. PHA 414.

PHA 442. Pharmacy Practice Management. 3 credits.

This course is designed to help students gain an appreciation for the various roles of management in pharmacy practice regardless of future position or practice setting. Management principles that are introduced, developed and demonstrated include operations management, financial analysis, human resource management, marketing, management of traditional pharmacy goods and services, management of value-added pharmacy services, and risk management. Students will be introduced to these concepts and asked to apply them by demonstrating business planning and pharmacy service implementation. P. PHA 321.

PHA 443. Basic Pharmacokinetics. 2 credits.

Pharmacokinetics is the mathematically-based study of drug movement in biological systems. This course provides a fundamental introduction to the basic pharmacokinetic principles of absorption, distribution, metabolism, and excretion. The practical application of these principles informs patient-specific therapeutic decisions. P or CO: PHA 313.

PHA 447. Chemical Basis of Drug Action II. 2.5 credits.

The Chemical Basis of Drug Action emphasizes the relevance of chemistry to contemporary pharmacy practice. The course integrates chemical, biochemical and physiological principles to derive structure-activity relationships for commonly encountered drugs that explain the scientific rationale for their therapeutic use. Active learning strategies are utilized to help learners develop the skills necessary to provide a scientific basis for patient-centered therapeutic decision-making. P. BMS 301 or PHA 301, PHR 241, PHA 337; CO: PHR 242.

PHA 448. Professional Development Seminar IV. 1 credit.

Professional Development Seminar IV is the last in a series of four courses to guide students in becoming ethical, reflective, and responsible practitioners in the Ignatian Tradition. In PDS IV, the topics of professionalism, leadership, entrepreneurship and innovation, career development, continuous professional development, and team readiness are emphasized through lecture, discussion, reflection, and other classroom and co-curricular activities.

PHA 451. Advanced Critical Care Elective. 2 credits. (Elective)

The Advanced Critical Care elective course provides in-depth advanced instruction concerning the pharmacotherapeutic management of commonly encountered critical care diseases. Emphasis is placed on the efficacy, safety, and comparative value of drug therapy in this highly specialized practice area. Didactic knowledge of physiology, pharmacology, and drug therapy management is applied to disease states specific to this population. Didactic instruction is combined with practice case studies and interactive discussions concerning critical care pharmacy-related issues. P. PHA 413, 414, and 415.

PHA 452. Pharmacoeconomics. 2 credits. (Elective)

This course will focus on the application of economic principles and trends applied to the pharmaceutical market. The student will be introduced to common economic evaluation methods (e.g., cost-benefit, cost-effectiveness, cost-utility) as applied to pharmaceutical products and services. Quality of life and outcomes research are explored. Other topics to be covered are: decision tree analysis, epidemiology and pharmacoeconomic research, pharmacoeconomic research in clinical trials, pharmacoeconomic research in community pharmacy practice, pharmacoeconomic research in medical centers, and pharmacoeconomics in the management of drug benefit programs (e.g., formulary development) The course will rely on the use of conventional economic analytical tools. Students should also have a basic knowledge of fundamental descriptive and analytical statistics. P. PHA 321; PHA 350.

PHA 454. Pharmacy Practice Law. 3 credits.

This course introduces students to the legal dimensions of pharmacy practice, with emphasis on federal and Nebraska statutes and regulations pertaining to licensure, pharmacy practice, prescription-only and over-the-counter drug products, controlled substances, drug product selection, and other requirements with which a pharmacy practitioner must comply.

PHA 455. Diabetes Care. 2 credits. (Elective)

This elective course develops knowledge, skills, treatment and problem solving techniques used to assist patients in the management of diabetes. Topics include the pathophysiology of Type I and Type II diabetes mellitus, disease progression, complications, and the impact of various therapies, medications, nutrition and exercise on glycemic control in the patient with diabetes. The course will serve to empower the pharmacy student to accept a more responsible role in the care of patients with diabetes. Upon successful completion of all course requirements, the student will receive a Certificate in Diabetes Care. P. PHA 415 and third year status.

PHA 456. Ethics in the Health Care Professions. 3 credits.

This course prepares students to approach ethical dilemmas objectively with a thorough understanding of professional moral responsibility. It assists students to: distinguish ethical from other kinds of issues in pharmacy; identify the morally relevant features of a case; identify the moral options open to a pharmacist faced with a moral 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 group interactions; and enhanced commitment to promoting the dignity of others.

PHA 457. Clinical Toxicology. 1 credit. (Elective)

This course will introduce students to the clinical toxicology of commonly encountered poisons. The course will utilize case studies and standardized approach to introduce general guidelines for the prevention and treatment of each poisoning. P. PHA 337 and PHR 241.

PHA 458. Literature Evaluation and Evidence-Based Practice. 3 credits.

This course prepares pharmacy students to practice evidence-based therapeutic decision-making in order to positively impact patient care. To meet this objective, the course integrates principles of evidence based medicine, students' prior knowledge of biostatistics and therapeutics, and advanced use of drug information resources. Emphasis is placed on the critical evaluation of medical literature and synthesis of information to form evidence-based therapeutic recommendations. Additionally, students will practice scientific communication orally and in written form in order to effectively communicate these recommendations. P. PHA 350 and PHA 414.

PHA 469. Dispensing and Patient Care II. 0-2 credits.

Dispensing and Patient Care II (DPC II) is designed to reinforce concepts presented in course lectures, and to support the development and application of skills required to practice contemporary pharmacy. Specific pharmacy practice skills will be introduced and reinforced through lectures, simulated pharmacy practice cases, and simulated patient encounters. P. PHA 326, PHA 359, and PHA 413.

PHA 470. Pharmacy-Based Immunization Delivery. 1 credit.

This required course enables students to become certified in pharmacy based immunization delivery. It is designed to teach pharmacy students (or practicing pharmacists) about vaccine-preventable diseases, about the many different vaccines available, and about optimal pharmaceutical care (including administering vaccines) for patients relative to immunizations. The course prepares students to provide a needed service to the community while obtaining clinical experience in a prevention oriented pharmaceutical care activity. P or CO: MIC 541, PHA 359.

PHA 480. Pediatric Pharmacy Practice Elective. 2 credits. (Elective)

This two-hour course provides in-depth instruction into the pharmacotherapeutic management of the major pediatric diseases. Emphasis is placed on the efficacy, safety, and comparative value of pediatric drug therapy. Didactic knowledge of physiology, pharmacology, and drug therapy management is applied to disease states specific to this population. Didactic instruction is combined with interactive discussions and exposure to pediatric pharmacy. P. PHA 414.

PHA 481. Oncology Pharmacy Practice Elective. 1 credit. (Elective)

This one-hour course provides instruction into the pharmacotherapeutic management of major oncology diseases and the provision of supportive care to oncology patients. Emphasis is placed on the efficacy, safety, and comparative value of oncology drug therapy, as well as issues surrounding the care of a cancer patient. Didactic knowledge of physiology, pharmacology, and drug therapy management is applied to disease states specific to this population. Didactic instruction is combined with interactive discussions and exposure to oncology pharmacy. P. PHR 241 and PHR 242.

PHA 484. Compounding Seminar and Practicum. 1 credit. (Elective)

This is a compounding immersion course offered off campus for students who want practical and hands-on knowledge and training in modern innovative non-sterile compounding. P. PHA 313, IC, and permission of student advisor.

PHA 489. Dispensing and Patient Care III. 0-2 credits.

Dispensing and Patient Care III (DPC III) is designed to reinforce concepts presented in course lectures, and to support the development and application of skills required to practice contemporary pharmacy. Specific pharmacy practice skills will be introduced and reinforced through lectures, simulated pharmacy practice cases, and simulated patient encounters. P. PHA 415 and PHA 469.

PHA 494. Advanced Pharmaceutical Compounding Seminar and Practicum. 2 credits. (Elective)

This is an advanced compounding course for students who have taken and passed the introductory compounding course and would like further instruction in advanced methods and techniques of pharmaceutical compounding. P. PHA 484 and PHA 313; IC.

PHA 495. Advanced Veterinary Compounding Seminar & Practicum. 3 credits. (Elective)

This is an advanced compounding course for students who have taken and passed the introductory compounding course and would like instruction in comprehensive veterinary pharmacotherapy and applications to compounding for veterinary patients. P. PHA 484; PHA 313; Instruction Consent.

PHA 499. Directed Independent Research II. 1-6 credits. (Elective)

This course provides students with the opportunity to become involved in a research project under the guidance of a faculty member. The course is repeatable to a maximum of six hours.

PHA 510. Community Advanced Pharmacy Practice Experience. 5 credits.

The Community Advanced Pharmacy Practice Experience (APPE) is a rotation in an approved community pharmacy which emphasizes not only medication dispensing and control, but also communicating with patients, prescribers, and other health care professionals. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 511. Hospital Advanced Pharmacy Practice Experience. 5 credits.

The Hospital Advanced Pharmacy Practice Experience (APPE) is an inpatient hospital rotation in an approved hospital/health system pharmacy designed to ensure student pharmacist preparedness for entry-level practice. This APPE allows the student to practice and enhance Pharmacist's Patient Care Process (PPCP) skills as they apply to direct patient care within the acute hospital (inpatient) setting. Emphasis is placed on students becoming active members of the healthcare team as they review medication orders, monitor patient medication therapy, identify, resolve, and prevent medication-related problems, as well as effectively communicate with other healthcare professionals. The primary skills developed in this rotation include patient and medication assessment, preparation, and monitoring, problem-solving and critical thinking, and written/verbal communication.

PHA 512. Acute Care Advanced Pharmacy Practice Experience. 5 credits.

The Acute Care Advanced Pharmacy Practice Experience (APPE) is a clinical rotation providing students an opportunity to provide medication therapy management and pharmaceutical care to adult patients in an inpatient acute care environment. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 515. Drug Information Advanced Pharmacy Practice Experience. 5 credits.

The Drug Information Advanced Pharmacy Practice Experience (APPE) allows the student to provide drug information services to pharmacists and other healthcare professionals. Emphasis is placed on how to receive requests, collect background information, conduct a systematic search, and provide an evidence-based recommendation based on a critical analysis of medical literature. The student will develop a working knowledge of relevant practice resources as well as develop the ability to critically evaluate such resources. The student may also have the opportunity to become involved with the evaluation of drugs for formulary inclusion, quality assurance/drug usage evaluation activities, news publications, scholarly activities, and Pharmacy and Therapeutics Committee Support. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 516. Ambulatory Care Advanced Pharmacy Practice Experience. 5 credits.

The Ambulatory Care Advanced Pharmacy Practice Experience (APPE) is a clinical rotation during which the student provides medication therapy management and pharmaceutical care in an ambulatory (outpatient) clinic setting. Emphasis is placed on how to appropriately identify, resolve, and prevent drug-related problems, as well as effectively communicates with patients and health care professionals. The skills developed in this rotation include patient counseling and education on drug information, written and verbal communication skills, assessment and documentation of services and therapy, and an appreciation for the pharmacist's role in the promotion of rational drug therapy. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 520. Elective Community Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Community Advanced Pharmacy Practice Experience (APPE) is a rotation in an approved community pharmacy which emphasizes not only medication dispensing and control, but also communicating with patients, prescribers, and other health care professionals. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 521. Community Management Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Community Management Advanced Pharmacy Practice Experience (APPE) is an elective rotation which provides experience in a community/retail pharmacy setting where students learn the various aspects involved with managing a pharmacy. The primary focus is financial analysis including third-party issues, inventory control, and personnel management as well as the processing of new and refill prescriptions. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 522. Advanced Community Advanced Pharmacy Practice Experience. 5 credits. (Elective)

This Advanced Community Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation which allows students to enhance their ability to provide medication therapy management to patients in a community/retail pharmacy setting. Pharmacotherapeutic knowledge and clinical skills are integrated with routine medication dispensing activities. The primary focus is patient assessment, counseling and education, medication therapy and disease state management, and documentation of patient information and interventions. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 523. Long Term Care Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Long Term Care Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation where the student gains skills and competence in the distribution of medication, provision of medication therapy management, and consulting services to the residents of nursing facilities, subacute care and assisted living facilities, psychiatric hospitals, hospice, and home- and community-based care. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 524. Elective Ambulatory Care Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Ambulatory Care Advanced Pharmacy Practice Experience (APPE) is a clinical rotation during which the student provides medication therapy management and pharmaceutical care in an ambulatory (outpatient) clinic setting. Emphasis is placed on how to appropriately identify, resolve, and prevent drug-related problems, as well as effectively communicates with patients and health care professionals. The skills developed in this rotation include patient counseling and education on drug information, written and verbal communication skills, assessment and documentation of services and therapy, and an appreciation for the pharmacist's role in the promotion of rational drug therapy. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 525. Informatics Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Informatics Advanced Pharmacy Practice Experience (APPE) is an elective rotation which focuses on fundamentals of pharmacy informatics such as pharmacy automation technology and information systems in a hospital setting. This rotation is beneficial to students who are interested in hospital pharmacy practice or those interested in specializing in pharmacy informatics. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 526. Home Infusion Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Home Infusion Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation which takes place in a setting that provides home health care services. The student will become familiar with the pharmacist's responsibilities in preparation of home parenteral products. The student may participate in several of the home care facility's activities including home visit assessments with the nurses, inventory and quality control of products and patient discharge consultations. The student will also be exposed to pumps and other parenteral devices needed in home care. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 527. Compounding Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Compounding Advanced Pharmacy Practice Experience (APPE) is an elective rotation in a community pharmacy that specializes in the compounding of extemporaneous drug products. The student will not only gain experience in preparing and compounding patient-specific dosage forms but will also learn how to provide medication therapy management for patients needing compounded medications. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 528. Institute For Latin American Concerns (ILAC) Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The ILAC Advanced Pharmacy Practice Experience (APPE) is a five-week clinical elective rotation in the study and practice of inter-disciplinary assessment, planning, implementation, and evaluation of health-care delivery in the ILAC Summer Program. Major focus is on the team approach to episodic health-care problems. This unique experience affords the student the opportunity to actively participate in the triage of health-care problems, health assessment, collaboration and diagnosis, explanation of treatment, and education in a Third World country (Dominican Republic) under the direction of faculty and pharmacy professionals. The ILAC Advanced Pharmacy Practice Experience (APPE) is a five-week clinical elective rotation in the study and practice of inter-disciplinary assessment, planning, implementation, and evaluation of health-care delivery in the ILAC Summer Program. Major focus is on the team approach to episodic health-care problems. This unique experience affords the student the opportunity to actively participate in the triage of health-care problems, health assessment, collaboration and diagnosis, explanation of treatment, and education in a Third World country (Dominican Republic) under the direction of faculty and pharmacy professionals. P. Successful completion of all didactic coursework in the Pharm.D. curriculum. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 529. International Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The ILAC Advanced Pharmacy Practice Experience (APPE) is a five-week clinical elective rotation in the study and practice of inter-disciplinary assessment, planning, implementation, and evaluation of health-care delivery in the ILAC Summer Program. Major focus is on the team approach to episodic health-care problems. This unique experience affords the student the opportunity to actively participate in the triage of health-care problems, health assessment, collaboration and diagnosis, explanation of treatment, and education in a Third World country (Dominican Republic) under the direction of faculty and pharmacy professionals. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 530. Emergency Medicine Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Emergency Medicine Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation which focuses on stabilization of emergent and critical medical conditions encountered in the Emergency Department (ED). The student will develop the ability to quickly and correctly determine the relevant history and physical status with selective use of ancillary services and specialties to achieve the most efficient and effective emergency assessment and management. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic courses of Pharm.D.

PHA 531. Medication Safety Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Medication Safety Advanced Pharmacy Practice Experience (APPE) is an elective rotation that will help students become familiar with the key principles utilized in hospitals and health systems to improve medication safety. The rotation is designed to expose students to medication safety nomenclature, key principles, tools, and available resources. The student will participate in several activities designed to improve the student's working knowledge and experience with medication safety concepts. The rotation will enable the student to apply knowledge in any pharmacy practice setting to improve medication safety for patients. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic courses of Pharm.D.

PHA 533. Organization Management Advanced Pharmacy Practice Experience. 5 credits. (Elective)

This Organization Management Advanced Pharmacy Practice Experience (APPE) is an elective pharmacy rotation that provides experience in national or local pharmacy association activities and operations, inter-organizational affairs, government affairs, health and education policy, institutional research, and related programmatic fields. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 534. Medication Therapy Management (MTM) Advanced Pharmacy Practice Experience. 5 credits. (Selective)

The Medication Therapy Management Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation in which the student gains competency in identifying, preventing, and resolving medication related problems, and effectively communicating with patients and health care providers to optimize therapeutic outcomes. Skills developed in this rotation include: comprehensive medication review, patient education, written and verbal communication skills, and assessment and documentation of services and therapy. P. Successful completion of all didactic courses of Pharm.D.

PHA 535. Academic Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Academic Advanced Pharmacy Practice Experience (APPE) is an elective pharmacy rotation which exposes students to the design and delivery of content to learners in a variety of settings, examines the diversity of learning strategies, and introduces students to the expectations for teaching, scholarship and service activities of faculty members. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 538. Managed Care Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Managed Care Advanced Pharmacy Practice Experience (APPE) is an elective rotation where the student will gain experiential training in the application of managed care pharmacy principles within the contemporary health care system. This rotation may take place at health insurance and pharmacy benefits management (PBM) organizations as well as other sites that provide formulary management and evaluation. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 540. Elective Hospital Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Elective Hospital Advanced Pharmacy Practice Experience (APPE) is an inpatient hospital rotation in an approved hospital/health system pharmacy designed to ensure student pharmacist preparedness for entry-level practice. This APPE allows the student to practice and enhance Pharmacist's Patient Care Process (PPCP) skills as they apply to direct patient care within the acute hospital (inpatient) setting. Emphasis is placed on students becoming active members of the healthcare team as they review medication orders, monitor patient medication therapy, identify, resolve, and prevent medication-related problems, as well as effectively communicate with other healthcare professionals. The primary skills developed in this rotation include patient and medication assessment, preparation, and monitoring, problem-solving and critical thinking, and written/verbal communication.

PHA 541. Hospital Management Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Hospital Management Advanced Pharmacy Practice Experience (APPE) is an elective rotation that provides insight on how to manage distributive as well as clinical functions within a hospital pharmacy environment. This rotation is completed with a hospital pharmacy director or manager. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 542. Elective Drug Information Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Drug Information Advanced Pharmacy Practice Experience (APPE) allows the student to provide drug information services to pharmacists and other healthcare professionals. Emphasis is placed on how to receive requests, collect background information, conduct a systematic search, and provide an evidence-based recommendation based on a critical analysis of medical literature. The student will develop a working knowledge of relevant practice resources as well as develop the ability to critically evaluate such resources. The student may also have the opportunity to become involved with the evaluation of drugs for formulary inclusion, quality assurance/drug usage evaluation activities, news publications, scholarly activities, and Pharmacy and Therapeutics Committee Support. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 543. Poison Center Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Poison Center Advanced Pharmacy Practice Experience (APPE) is an elective pharmacy rotation which offers students an opportunity to become familiar with the operation of a poison center. During the rotation, the students develop skills necessary for handling calls to a poison center while enhancing their knowledge base in clinical toxicology. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 545. Nuclear Medicine Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Nuclear Medicine Advanced Pharmacy Practice Experience (APPE) is an elective rotation which introduces the student to nuclear pharmacy and its applications to clinical nuclear medicine. The student will be exposed to the fundamentals of radiopharmaceutical preparation and utilization within a centralized nuclear pharmacy. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 546. Veterinary Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Veterinary Advanced Pharmacy Practice Experience (APPE) is an elective rotation where students will obtain knowledge and skills working with animals in a veterinary medicine setting. This course will provide valuable instruction on the uses and indications of human and veterinary labeled medications to treat diseases affecting companion, exotic, and food animals. Rotation settings may include: veterinary pharmacies, hospitals, and clinics. Specific specialties depending on setting may include: pet health, small animal internal medicine, anesthesia, ophthalmology, exotic/zoo animal and wildlife medicine, equine medicine and surgery, agricultural practice, cardiology, oncology, radiology, and dermatology. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 550. Industry Advanced Pharmacy Practice Experience. 5 credits. (Elective)

This Industry Advanced Pharmacy Practice Experience (APPE) is an elective rotation where the student learns the responsibilities of the industry pharmacist. The student observes various activities of the drug industry, such as research and development, manufacturing quality control, clinical testing, information support, marketing, and regulatory affairs. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 551. Research Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Research Advanced Pharmacy Practice Experience (APPE) is an elective rotation designed to provide students with experience in research design and development, performance of experiments, data collection and analysis, the peer review process, and animal or human research regulations. It is recommended that students have previously taken directed independent research, PHA 399 or PHA 499. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 560. Elective Acute Care Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Acute Care Advanced Pharmacy Practice Experience (APPE) is a clinical rotation providing students an opportunity to provide medication therapy management and pharmaceutical care to adult patients in an inpatient acute care environment. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 563. Infectious Disease Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Infectious Disease (ID) Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation in which the student gains competency and proficiency in the medical management of patients with infectious diseases in the hospitalized setting. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 566. Oncology Advanced Pharmacy Practice. 5 credits. (Elective)

The Hematology/Oncology Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation that is intended to provide the student with advanced experiential training in providing pharmaceutical care for oncology patients. The student will gain a better understanding of the care of a cancer patient, including antineoplastics, toxicity management, supportive care, and the administrative functions of an oncology pharmacist. This rotation may be completed in an acute care setting or an ambulatory care setting. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 568. Critical Care Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Critical Care Advanced Pharmacy Practice Experience (APPE) is a clinical elective rotation in which the student gains competency in patient medical management in the intensive-care unit of a hospital. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 569. Cardiology Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Cardiology Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation that will develop the student's ability to make rational decisions concerning cardiovascular medications in the patient care setting. The student will acquire specialized knowledge concerning major cardiovascular disease states, invasive and noninvasive cardiovascular diagnostic techniques and the pharmacology, pharmacokinetics, and clinical use of cardiac drugs. This rotation setting is most often inpatient, but in some cases may be in an ambulatory setting or a combination of both. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 570. Psychiatry Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Psychiatry Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation that offers students the opportunity to provide medication therapy management to mentally ill patients in an inpatient acute care or outpatient environment. The student acts as a member of the mental health care team and is involved with patient monitoring, decisions regarding drug therapy, patient medication counseling and provision of drug information to team members. Emphasis within the rotation is focused on teaching the student how to provide medication therapy management to the person with a mental illness and communication with patients and the mental health care team. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 572. Pediatrics Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Pediatrics Advanced Pharmacy Practice Experience (APPE) is an elective clinical rotation in which the student gains competencies in the medical management of patients in the neonatal/pediatric populations. The setting for this rotation may be inpatient (hospital), outpatient (clinic), a combination of inpatient/outpatient, neonatal/pediatric intensive-care unit or pediatric unit/clinic. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 573. Nutrition Support Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Nutrition Support Advanced Pharmacy Practice Experience (APPE) is a clinical elective rotation with a pharmacy preceptor on a nutrition or metabolic support service which provides inpatient parenteral and enteral nutrition therapies. Students will gain experience reviewing patient's labs and recommending adjustments to their therapy. P. Successful completion of all didactic coursework in the Pharm.D. curriculum.

PHA 574. Neurology Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Neurology Advanced Pharmacy Practice Experience (APPE) is a clinical elective rotation in which the student gains competency in the medical management of patients with neurological disorders in the inpatient hospital and/or ambulatory clinic environments. This course is repeatable to a maximum of 10 credit hours. P. Successful completion of all didactic courses of Pharm.D.

PHA 575. Transition of Care Advanced Pharmacy Practice Experience. 5 credits. (Elective)

The Transition of Care Advanced Pharmacy Practice Experience (APPE), is an elective, inpatient hospital clinical rotation intended to provide students with advanced experiential training in medication management and counseling provided for patients upon discharge. The skills developed in this rotation include: communicating verbally with physicians and other healthcare professionals regarding discharge medication orders, coordinating discharge patient care, documenting services, provider counseling and educating patients about their discharge prescription medications, and reviewing patient discharge medication orders for completeness and accuracy. P. Successful completion of all didactic courses within the PharmD curriculum.

PHA 576. Transplant Advanced Pharmacy Practice Experiences. 5 credits.

The Clinical Specialty Elective Advanced Pharmacy Practice Experience (APPE) is a clinical rotation designed to ensure student pharmacist preparedness for entry-level practice. This experience allows the student to practice and enhance Pharmacist's Patient Care Process (PPCP) skills as they apply to direct, specialized patient care practice within either the ambulatory or hospital (inpatient) acute care environment. Emphasis is placed on students becoming active members of the healthcare team as they manage patient medication therapy, identify, resolve, and prevent medication-related problems, as well as effectively communicate with other healthcare professionals. The primary skills developed in this rotation include patient and medication assessment, individualized patient care plan development, written and verbal communication skills, and documentation of patient care plans and encounters. Students should work with common disease states and pharmacotherapy generally encountered in the corresponding specialized patient care setting. This course is repeatable to a maximum of 10 credit hours. Prereq: Successful completion of all didactic and introductory experiential courses within the PharmD curriculum.

PHR 241. Pharmacology I. 0-4.5 credits.

This course can be offered on campus or web-based. A comprehensive coverage of the major drug groups and their mechanisms. The emphasis is on human pharmacology and the rational basis for therapeutics. Specific drug classes will be discussed with emphasis on mechanism of action, organ systems affected by the drugs, their pharmacokinetics, therapeutic indications, untoward effects, contraindications and drug-drug interactions. P. BMS 301 or PHA 301; BMS 404 or PHA 404; MIC 541; CO: PHA 337.

PHR 242. Pharmacology II. 0-4.5 credits.

The pharmacy pharmacology course provides a comprehensive coverage of the major drug groups and their mechanisms. The emphasis is on the pharmacological basis for the therapeutic use of drugs. Specific drug classes will be discussed with emphasis on mechanism of action, organ systems affected by drugs, adverse effects, contraindications, pharmacokinetics, therapeutic indications and drug-drug interactions. P. PHR 241.