

PHARMACY (PHAR)

PHAR 500 - INTRODUCTION TO PROFESSIONAL DEVELOPMENT

The course introduces students to the profession, historic elements, and the process for becoming a pharmacist. Students will engage in self-reflection about the opportunities within the profession and the education and training required to obtain their desired pharmacy position. This course introduces the importance of interprofessional approaches to patient care in complex health care systems and the role of the pharmacist to assure optimal medication therapy outcomes. Credits: 0.67,1

PHAR 503 - FOUNDATIONAL SCIENCE I

This course series prepares the pharmacy student for the clinical pharmacy curriculum. Students learn to apply the fundamental principles of biochemistry, pathophysiology, medicinal chemistry, pharmacology, microbiology and immunology to the patient care process. Credits: 4

PHAR 505 - IMMUNIZATION CERTIFICATION

Pharmacy-Based Immunization Delivery is an innovative and interactive training program that teaches student pharmacists and pharmacists the skills necessary to become a primary source for vaccine information and administration. The program teaches the basics of immunology and focuses on practice implementation and legal/regulatory issues. Credits: 1,1.5

PHAR 506 - FUND OF SOLID ORGAN TRANSPLANT

In the solid organ transplant setting, pharmacists have a unique role on multidisciplinary medical teams through their expertise in pharmacotherapeutics, pharmacokinetics, and drug information. This course introduces students to select disease states encountered in the solid organ transplant setting as well as current controversies regarding the clinical management of these patients. The therapeutic management of transplant patients will be discussed using case study, interactive methods and lecture formats. This elective provides an opportunity to advance solid organ transplant understanding and clinical application for students potentially interested in pursuing residency training and/or specialty training in solid organ transplant pharmacy. Credits: 2,3

PHAR 507 - PROFESSIONAL DEVELOPMENT

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism). Credits: 1

PHAR 508 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP II

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism). Credits: 0.5

PHAR 509 - PHARMACEUTICAL CARE I

This course sequence introduces new concepts to the student pertaining to professional practice of pharmaceutical care. The student will build knowledge and engage in experiences necessary to provide pharmaceutical care to patients. Credits: 3.5

PHAR 510 - BIOCHEMISTRY I

Knowledge of biochemistry is necessary to understand physiology and pathology of all cells, tissues and organ systems, as well as pharmacologic and therapeutic strategies employed in disease management. This clinically relevant biochemical knowledge base will be covered in two courses in the curriculum designated as Biochemistry I & II and are designed to produce specific educational and ability-based outcomes. Credits: 2.67,4

PHAR 511 - BIOCHEMISTRY II

Knowledge of biochemistry is necessary to understand physiology and pathology of all cells, tissues and organ systems, as well as pharmacologic and therapeutic strategies employed in disease management. This clinically relevant biochemical knowledge base will be covered in two courses in the curriculum designated as Biochemistry 1 & 2 and are designed to produce specific educational and ability-based outcomes. Credits: 2.67,4

PHAR 512 - CLINICAL MICROBIOLOGY & IMMUNOLOGY

Clinical microbiology and immunology is designed to train students in the principles of microbiology and introduce them to its application in pharmaceutical and clinical practice and to the understanding and management of infectious diseases. Topics in pharmaceutical and clinical microbiology will include fundamental principles of pathogenicity (specifically bacteria, fungi, viruses and parasites), antimicrobial agents, contamination and infection control, aseptic techniques and sterility requirement in pharmaceuticals production. Credits: 2.67,4

PHAR 514 - FOUNDATIONAL SCIENCE II

This course is focused on providing the background in functional anatomy, physiology, and pathology of organ systems that will allow students to integrate knowledge necessary to formulate a therapeutic care plan, to recommend and defend the course of treatment that best addresses a patient's needs, to evaluate the effectiveness of a treatment regimen and manage medications in a manner that assures optimal therapeutic. Credits: 3
Course Notes: No additional credit granted for PHAR 514 as 'PATHOPHYSIOLOGY I'

PHAR 518 - INTEGRATED SEQUENCE I

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration. Credits: 4.5

PHAR 519 - PHARMACEUTICS I: CALCULATIONS

This course focuses on the foundational mathematical skillsets used in community pharmacy, hospital pharmacy, compounding/manufacturing settings, and clinical practice. The course is designed to introduce a new skillset with repeated practice to prepare them for the remainder of the curriculum, board exams, and pharmacy practice. The topics covered include interpreting prescription and medication orders, unit and dose conversions, measurements, specific gravity/density, concentration units, medication dosing, dilutions techniques, rates of administration, solution calculations, isotonicity, buffer solutions, and calculations used in clinical pharmacy practice. Students must demonstrate competency by earning an 80 % on a comprehensive final exam at the end of the course.

Credits: 1.67,2.5

PHAR 520 - PHARMACEUTICS I: DRUG DELIVERY

The course will familiarize the student with the physical and chemical principles governing pharmaceutical chemistry and dosage form development. The student will be introduced to how basic physical/chemical principles are important in the preparation, compounding of the dosage form, and disease-based or patient-centered decision making and therapeutic outcomes. The influence of physico-chemical principles on storage and administration of the various pharmaceutical dosage forms will also be covered in class.

Credits: 2.67,4

PHAR 521 - PHARMACEUTICS II: DRUG DELIVERY AND LAB

The course focuses on physical and chemical principles relevant to the design, formulation, manufacturing, and use of pharmaceutical products such as powders, tablets, capsules, controlled delivery systems, sterile products and biopharmaceuticals. The properties of drug substance, non-active ingredients, excipients, and potential interactions between two entities are discussed. The influence of the interactions and relevance on drug product performance, stability and patient safety is highlighted. Related clinical outcomes relevance is discussed.

Credits: 2.33,3.5

PHAR 522 - PHARMACEUTICS III

Pharmaceutics III is a continuation of the didactic and laboratory courses in Pharmaceutics I/II: Drug Delivery. The principles and mechanisms of drug absorption, distribution, metabolism, elimination (ADME), bioavailability and bioequivalence will be covered. Influence of the concepts on decision making regarding choice of drug, switching a drug within a pharmacologic/therapeutic class to another, compliance, wellness of patients, etc. will be discussed.

Credits: 2,3

PHAR 523 - PHARMACEUTICAL CARE II

This course is designed to introduce students to the practice of pharmacy and pharmaceutical care. Topics covered include: Medication adherence, patient counseling, blood pressure and vitals, physical assessment.

Credits: 2.5

PHAR 525 - INTEGRATED SEQUENCE II

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration.

Credits: 2.5

PHAR 526 - INTEGRATED SEQUENCE III

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration.

Credits: 2.5

PHAR 527 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP I

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism).

Credits: 0.33,0.5

PHAR 528 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP II

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism).

Credits: 0.33,0.5

PHAR 529 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP III

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism).

Credits: 0.33,0.5

PHAR 530 - Foundational Science III

This course is designed to provide background necessary to choose drugs based on their pharmacokinetic (absorption, distribution, metabolism and elimination; ADME), and pharmacodynamics (drug-receptor interactions, agonists, partial agonists, and antagonists) parameters and introduce students to pharmacology of drugs affecting the autonomic nervous system, as well as basic concepts in pharmacotherapy.

Credits: 3

PHAR 531 - INTEGRATED SEQUENCE: IMMUNOLOGIC, RHEUMATOLOGIC, AND PULMONARY DISORDERS

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to infectious diseases and pulmonary disorders.

Credits: 3,4.5

PHAR 532 - INTEGRATED SEQUENCE: ENDOCRINE SYSTEMS

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to endocrine and pulmonary diseases.

Credits: 3,4.5

PHAR 533 - RESEARCH IN TRANSL ONCOLOGY

This course is designed to provide a base level of knowledge and practical experience in research activities related to translational oncology. Students will collaborate with Professor Hart on a specific topic to address key fundamental questions in cancer biology. Students will learn proper ways to mine literature, and develop skills in critical analysis and interpretation of primary research. Students will participate in literary review on a chosen subject, analyze historic and recent literature pertaining to said subject, and write up their review of the literature and assessment of pitfalls and future directions for the particular field. Students will have the opportunity to co-author publications resulting from this collaborative effort. Projects will be presented with a focus on laboratory activities of relevance to a Doctor of Pharmacy candidate, as they will evaluate biological principles related to mechanisms of tumor progression using physiologically-relevant approaches and/or pharmacological interventions to treat cancer. Research topics will be assigned based on the interests, strengths and focus of this course's faculty director and will be designed to help the student read, understand and interpret scientific literature.

Credits: 1-3

Course Notes: Completion of term 4 with satisfactory academic progress and instructor interview.

PHAR 534 - CLINICAL CRITICAL CARE & EMERGENCY MEDICINE

This course is designed to introduce pharmacy students to critical care and emergency medicine pharmacotherapy topics and cases, while expanding on didactic lectures learned in previous integrated sequence courses. The role of the critical care/emergency medicine pharmacist on the interdisciplinary team will be highlighted, while also discussing how the critical care pharmacist can be utilized as a resource during medical emergencies. Examples of topics to be discussed include trauma response/resuscitation efforts, code blue and code stroke response, rapid sequence intubation, and management of life-threatening bleeds.

Credits: 1,1.5

PHAR 535 - EQUITY AND ETHICS FROM A HEALTHCARE PERSPECTIVE

This course is designed to provide a creative way to facilitate discussions about health ethics issues and engage in ethics discussions and education. Course instructors will select a variety of media such as books, movies, podcasts, and videocasts with a health ethics theme to introduce different health ethics concepts throughout the course.

Credits: 1.5

PHAR 536 - MAKING IT UP AS YOU GO: USING IMPROVISATION TO ENHANCE COMMUNICATION

This applied improvisation course utilizes improv and theater-based exercises to enhance students' communication and teamwork skills as a pharmacist. Through a series of improv exercises we will explore various elements of verbal and non-verbal communication, both in the context of the individual in addition to the team setting. Each series of exercises is paired with a debrief that provides students the opportunity to connect and translate skills from the exercise into improving their creativity, communication, teamwork, presentation skills. In addition to the improv exercises, various reading assignments will be provided that explore improv in a variety of settings: from the stage to the professional setting, which will enhance the students understanding of the application of improv outside of the classroom through op-ed articles and scientific studies. Inside and outside of the classroom, reflection exercises will be assigned that provide students the opportunity to further explore applying the skills of improv from the classroom into their everyday lives. By participating in the Improv to Enhance Communication course, students will gain a renewed appreciation of the complexity of communication, insight into their own style of communication and an openness to embracing the uncertainty and spontaneity in all interactions.

Credits: 1

PHAR 538 - CLINICAL CASE DISCUSSIONS IN DIABETES

This course is designed to help students gain a better understanding of drug therapy for diabetes, and examine practical issues in diabetes care. Students in this class will participate in discussions of cases of real patients with diabetes. Each week, cases will focus on a different aspect of diabetes management. All students will be expected to lead at least one discussion, as well as participate in discussions each week.

Credits: 0.5-2

PHAR 543 - RESEARCH IN BIOTECHNOLOGY

Pharmaceutical Biotechnology is important area of science and technology, and contributes to design and delivery of new therapeutic drugs, the development of diagnostic agents for medical tests, and the beginnings of gene therapy for correcting the medical symptoms of hereditary diseases. This course will introduce the students to various biotechnology techniques used to attenuate chronic disorders like cancer, diabetes etc. Students will be involved in working independently on a research project that involves but not limited to characterization and expression of gene delivery vectors.

Credits: 0.5-5

PHAR 550 - PHARMACY LAW AND ETHICS

This course is designed to teach students the history of pharmacy laws, and describe how these laws structured current practice guidelines and impact the distribution and dispensing of drugs. Students will learn the federal, state, and local statutes concerning pharmacy practice and healthcare policies relevant to the practice of pharmacy.

Credits: 3

PHAR 551 - HEALTH CARE SYSTEMS

This course will discuss the U.S. health care system and approaches to ensure medication safety. External forces affecting health care delivery, organizational structure including professionals and policy surrounding those forces will be discussed in general. Specifically, the impact these issues have on the pharmacy profession will be examined as well as the models of pharmacy practice that exist today. Students should gain further understanding of the dynamic health care market.

Credits: 2

PHAR 552 - BIOSTATISTICS AND PHARMACO

This course is designed to introduce to first year pharmacy students, the concepts and methods of biostatistics, epidemiology and study design. This course will help students understand the types of clinical research study designs, applied biostatistics, quality of data, applicability of research results and the ability to evaluate studies critically based upon the quality of the reported data and study designs and not solely on the opinion of the researchers.

Credits: 2,3

PHAR 554 - DRUG LITERATURE EVALUATION

This course is designed to provide pharmacy students with an overview of drug information resources, demonstrate medical information searching and retrieval skills, employ analysis and synthesis of drug information, and strengthen written and verbal communication skills. Students will learn how to critically evaluate biomedical literature and apply this knowledge to resolve issues regarding optimal medication use and medication-related adverse events.

Credits: 2,3

PHAR 557 - DRUG DEVELOPMENT PROCESS

This course will focus on the entire process of discovering, developing (including preformulation or early phase development) and testing (preclinical through clinical) a new drug substance through the various phases of its life cycle (discovery, in vitro and in vivo testing, ADME, toxicology and biodistribution, Investigational New drug (IND) submission and approval, human clinical trials and New Drug Application (NDA)). Papers will be assigned and classes would be run as seminar-type sessions with enrollees describing what each step entails and the type of information that needs to be gathered to apply for Investigational New Drug approval. This course will inform students on the purpose and design of each phase of human clinical trials. This course will focus on the entire process of discovering, developing (including preformulation or early phase development) and testing (preclinical through clinical) a new drug substance through the various phases of its life cycle (Discovery, in vitro and in vivo testing, ADME, Toxicology and Biodistribution, Investigational New drug (IND) submission and approval, Human Clinical trials and New Drug Application (NDA)). Papers will be assigned and classes would be run as seminar-type sessions with enrollees describing what each step entails and the type of information that needs to be gathered so to apply for an investigational New Drug approval. Included would be a description of the purpose and design of each Phase of human clinical trials.

Credits: 3

PHAR 567 - PHARMACEUTICAL BIOTECHNOLOGY

Pharmaceutical Biotechnology is an increasingly important area of science and technology, and contributes to design and delivery of new therapeutic drugs, the development of diagnostic agents for medical tests, and the beginnings of gene therapy for correcting the medical symptoms of hereditary diseases. This course is designed to provide pharmacy graduate students with a basic understanding of the macromolecular drugs such as proteins and nucleic acids that have emerged as a new class of therapeutic agents due to their unique biological and pharmacological properties.

Credits: 1.5

PHAR 569 - ADVANCED INFECTIOUS DISEASES

This course is designed to give students a more advanced experience into infectious diseases pharmacotherapy, building upon topics learned in the IS-VII course. Students will learn approaches of antimicrobial therapy in challenging situations such as treatment of highly resistant organisms, treatment of zoonotic infections, and approaching antimicrobial stewardship from a practical approach. Furthermore, students will get practice to critically evaluate ID literature from weekly assignments as well as in their final case presentation.

Credits: 2,3

PHAR 570 - PROFESSIONAL PRACTICE I

Professional Practice I & Introductory Pharmacy Practice Experiences foundations are each an 80 hour sequence of internship activities which provides a number of experiential activities that integrate knowledge and skills you will be learning within your didactic courses. The continuum will serve as building blocks to prepare you for the advanced practice experiences. The learning activities will take you into authentic settings to develop important professional abilities.

Credits: 2,3

PHAR 571 - PROFESSIONAL PRACTICE II & IPP

Professional Practice II & Introductory Pharmacy Practice Experiences (IPPEs) foundations are each an 80 hour sequence of internship activities which provides a number of experiential activities that integrate knowledge and skills you will be learning within your didactic courses. The continuum will serve as building blocks to prepare you for the advanced practice experiences. The learning activities will take you into authentic settings to develop important professional abilities.

Credits: 2,3

PHAR 572 - PROF PRACTICE III & IPPE

Professional Practice I, II, III, IV & Introductory Pharmacy Practice Experiences (IPPEs) foundations are a 320-hour four-term sequence of internship activities which provides a number of experiential activities that integrate knowledge and skills you will be learning within your didactic courses. The continuum will serve as building blocks to prepare you for the advanced practice experiences. The learning activities will take you into authentic settings to develop important professional abilities.

Credits: 2,3

PHAR 580 - PRACTICE MANAGEMENT

Credits: 2

PHAR 582 - BIOSTATISTICS & DRUG LIT EVAL

This course is designed to introduce to first year pharmacy students, the concepts and methods of biostatistics, epidemiology and study design. This course will help students understand the types of clinical research study designs, applied biostatistics, quality of data, applicability of research results and the ability to evaluate studies critically based upon the quality of the reported data and study designs and not solely on the opinion of the researchers. Additionally students will receive an overview of drug information resources, medical information searching and retrieval skills, employ analysis and synthesis of drug information, and strengthen written and verbal communication skills. Students will learn how to critically evaluate biomedical literature and apply this knowledge to resolve issues regarding optimal medication use and medication-related adverse events.

Credits: 3

PHAR 590 - ONCOLOGY LITERATURE RESEARCH

This literature-based research elective is focused on utilizing online databases to investigate therapeutic opportunities in treatment of ovarian cancer. Students will work with the course director to systematically evaluate the novelty and feasibility of lead compounds identified during high-throughput screening to determine whether these drugs may provide new approaches to enhance current standards of care for ovarian cancer.

Credits: 0.5-2

PHAR 591 - PHARMACEUTICS I

The pharmaceuticals course sequence will cover pharmaceutical calculations, drug delivery systems, biopharmaceutics, and pharmacokinetics. Course sequence objectives include: competency in calculations, understanding the physical and chemical properties and functions of Ingredients of dosage forms, compounding dosage forms either by extemporaneous formulation or by published literature, and qualitatively or quantitatively interpreting and solving for parameters related to absorption, distribution, and elimination of drug and implications in patient care.

Credits: 2

PHAR 592 - PHARMACEUTICS II

Credits: 4.5

PHAR 593 - PHARMACEUTICS III

Credits: 3.5

PHAR 601 - PC:SELF-CARE & NON-RX THER

Subsequent terms of the course sequence introduce new concepts to the student pertaining to professional practice of pharmaceutical care. The student will build upon previous knowledge and engage in experiences necessary to provide pharmaceutical care to patients. Students will continue to hone and accumulate knowledge and skills from topics pertaining to renal, genitourinary, and cardiovascular pharmacotherapy and demonstrate these in ongoing assessments and capstone objective structured clinical examinations.

Credits: 2.67,4

Attributes: Lab Course

PHAR 602 - PC:STERILE PROD

This course is fourth in the series of six pharmaceutical care lab courses. Throughout this series, lecture, lab, and active learning formats are utilized. PC Lab IV specifically addresses practical applications of topics covered in Integrated Sequence VI and VII. These topics include musculoskeletal injuries, management of hepatic drug interactions, prevention and management of ulcer, ostomy products and OTC gastrointestinal agents. Additionally, activities to reinforce knowledge of the top 150 drugs and nonprescription therapeutics are continued.

Credits: 1.33,2

PHAR 603 - PHARMACEUTICAL CARE III

This course is fifth in the series of six pharmaceutical care lab courses. Throughout this series, lecture, lab, and active learning formats are utilized. PC Lab V specifically addresses practical applications of topics covered in Integrated Sequence VIII and IX. These topics include psychiatric and neurologic conditions. Additionally, activities to reinforce knowledge of the top 150 drugs and nonprescription therapeutics are continued. PC Lab V also addresses concepts and skills related to sterile preparations.

Credits: 2

PHAR 604 - PHARMACEUTICAL CARE: ADVANCED DISEASE STATE MANAGEMENT

This course is designed to review and assess clinical knowledge, skills and concepts learned in previous courses throughout the curriculum in preparation for Advanced Pharmacy Practice Experience rotations. The course will focus on accessing and interpreting appropriate clinical practice guidelines, patient assessment, communication, clinical decision making and documentation of patient assessment and therapeutic recommendations.

Credits: 2,3

Course Notes: No additional credit granted for PHAR 604 as PC : OSCE

PHAR 608 - FOUNDATIONAL SCIENCE IV

This course series prepares the pharmacy student for the clinical pharmacy curriculum. Students learn to apply the fundamental principles of biochemistry, pathophysiology, medicinal chemistry, pharmacology, microbiology and immunology to the patient care process.

Credits: 2.5

PHAR 609 - THESIS DESIGN AND PROPOSAL

The research course is focused on the student developing a research proposal with his advisor on a topic selected by the advisor. The research topics will range from pharmacology, pharmaceuticals, drug delivery to traditional medicine, medicinal chemistry, molecular pharmaceuticals, etc. The student will then present the proposal to research committee that will be composed by the research advisor as a final assessment of the success of the design.

Credits: 3

PHAR 612 - RESEARCH ELECTIVE IN INFECTIOUS DISEASES

This course is designed as an introduction into the professional medical writing and literature search and synthesis. Students will be exposed to the clinical research process from the initial idea stages, will be required to complete a literature review and write the study background, and be able to identify variables to collect and create a data collection sheet.

Credits: 0.5-2

PHAR 613 - RESEARCH IN MEDICINAL CHEMISTRY

This course is designed to provide a base level of knowledge and practical experience in laboratory activities related to medicinal chemistry experimentation. Students will be given a topic of interest and relevance to the drug discovery and development activities of Professor Olson. Students will develop and devise a testable hypothesis to answer fundamental questions and concepts. Students will learn laboratory procedures and approaches and will be taught to respect and adhere to laboratory safety and regulatory criterion. Students will gather data and analyze data to address the scientific significance of their experiments. Students will have the opportunity to co-author scientific publications on their experimental findings and accomplishments and present their work in public venues. Projects will be presented with a focus on laboratory activities of relevance to a Doctor of Pharmacy candidate. Research topics will be assigned based on the interests and strengths and focus of this course's faculty director and will be designed to help the student read understand and interpret literature reports that relate to drugs, especially how drugs were developed, tested, and approved for human use.

Credits: 0.5-3

PHAR 614 - PHARMACY REMEDIATION COURSE I

Pharmacy Remediation Course I is a flexible credit course to be used by the College to remediate content to ensure competence in remedial topic. Pharmacy Remediation Course I is a flexible credit course to be used by the College to remediate content to ensure competence in remedial topic.

Credits: 0.5-4

PHAR 615 - PHARMACY REMEDIATION COURSE II

Pharmacy Remediation Course II is a flexible credit course to be used by the College to remediate content to ensure competence in remedial topic. Credits: 0.5-5

PHAR 616 - TUTORING EXPERIENCE IN PHARMACEUTICAL CALCULATIONS

The student will have opportunities to serve as a teaching assistant for PHAR 519, design educational materials, and provide approximately 15-20 hours of tutoring over the duration of the course, as necessary. Group meetings will take place weekly to discuss challenges and teaching opportunities. Credits: 2,3

PHAR 617 - ADVANCED INTEGRATIVE MEDICINE AND MINDFULNESS-BASED STRESS REDUCTION

This course is a highly experiential hybrid course designed to provide students the opportunity to apply advanced knowledge of integrative medicine to common patient presentations as part of a comprehensive treatment plan. Integrative medicine interventions introduced in the course will focus heavily on appropriate use of herbals, supplements, and mindfulness interventions in the outpatient setting. Each week of the course introduces management of a new condition commonly treated with integrative approaches. Mega-cases will be utilized, meaning students will follow the same theoretical patients, and/or family members of the original patients, longitudinally throughout the duration of the course. The course will allow students to not only understand the importance of treatment of the holistic patient over time, but the role of understanding the patient's story and shared decision-making in optimal treatment. Within the course, students will actively participate in the highly evidence-based 8-week Mindfulness-Based Stress Reduction (MBSR) program as a component of the course. The goal of the MBSR program as embedded in this course is for students to understand deeply, and experience fully, the practice of mindfulness; as a result, students will be able to utilize mindfulness as an e Credits: 3

PHAR 618 - INTEGRATED SEQUENCE IV

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration. Credits: 3

PHAR 619 - INTEGRATED SEQUENCE V

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration. Credits: 3

PHAR 620 - RESEARCH IN NEUROPHARMACOGNOSY

This course is designed to provide students with the base knowledge and practical skills relating to conducting research in the field of neuropharmacognosy (the study of pharmacological properties of naturally-occurring drugs in relation to their effects on the Central Nervous System). Students will collaborate with faculty to develop and address a specific topic relating to either 1) potential neuropathological targets for a specific naturally-occurring compound, or 2) potential naturally occurring therapeutics for targeting a specific neuropathological condition. Students will develop the skills necessary to conduct, analyze and present a thorough literature review of their topic, including identification of knowledge gaps and any socio-economic, practical, or legal challenges to conducting research related to their specific topic. Credits: 0.5-2

PHAR 621 - RESEARCH PROJ IN HEAL DISPAR

Credits: 1.5-3

PHAR 626 - HISTORY OF PHARMACY IN AMERICA

This course is designed to introduce the pharmacy student to the history of pharmacy. This will be accomplished by focusing upon the historical development of pharmacy in the United States. By examining the growth and professionalization of the field, its statutory regulation and its product development students will be able to apply the lessons of history to current and future practice philosophies. The history of pharmacy is an area that receives little attention in the pharmacy curriculum but its lessons and tradition are of great importance in recognizing and understanding the professionalism required of a pharmacist. Credits: 1,1.5

PHAR 627 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP III

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism). Credits: 0.5

PHAR 628 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP IV

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism). Credits: 0.5

PHAR 629 - PROFESSIONAL DEVELOPMENT AND LEADERSHIP VI

This course is designed to expand and track the personal and professional growth of students. This course is part of a longitudinal series spanning 6 quarters of the didactic curriculum during the P1-P3 years. This longitudinal course is designed to enhance the attributes needed by new pharmacist practitioners (advocacy, inter-professional collaboration, cultural awareness, self-awareness, leadership, innovation and entrepreneurship, and professionalism). Credits: 0.33,0.5

PHAR 630 - INTEGRATED SEQUENCE: RENAL AND GENITOURINARY SYSTEMS

Integrated Sequence IV: Renal and Genitourinary Systems. This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to renal and genitourinary diseases.

Credits: 2.5

PHAR 631 - INTEGRATED SEQUENCE: CARDIOVASCULAR SYSTEMS

Integrated Sequence V: Cardiovascular Systems. This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to cardiovascular diseases.

Credits: 4.5

PHAR 632 - INTEGRATED SEQUENCE: GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to the gastrointestinal and hepatobiliary systems.

Credits: 2.5

PHAR 633 - INTEGRATED SEQUENCE VI

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to the musculoskeletal and immune systems.

Credits: 3.5

PHAR 634 - INTEGRATED SEQUENCE VII

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to the neurological systems.

Credits: 3

PHAR 635 - INTEGRATED SEQUENCE VIII

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to the treatment of psychiatric and mood disorders, and related behavioral conditions.

Credits: 3

PHAR 636 - INTEGRATED SEQUENCE: HEMATOLOGIC AND ONCOLOGIC DISORDERS

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to the treatment of hematologic and oncologic disorders.

Credits: 3,4,5

PHAR 637 - INTEGRATED SEQUENCE: SPECIAL PATIENT POPULATIONS/ CONDITIONS

This course is designed to provide background necessary to select optimal drug regimens based on biopharmaceutical principles and clinical considerations of the medications presented herein and introduce students to the scientific, clinical, social and economic aspects of drug use pertaining to the special patient populations including critically ill patients, geriatric patients, pediatric patients, women's health needs, patients with other illnesses that require special considerations.

Credits: 3,4,5

PHAR 639 - BUSINESS PLAN ELECTIVE

This elective course is designed to encourage self-directed learning in regards to creating an innovative pharmacy business plan as a team of 2 to 5 students. The rubric follows the Illinois Pharmacists Association's (IPhA) yearly Pharmacy Innovative Challenge (PIC) competition conducted at the annual conference, and aims to further develop a student's research, written, oral and presentation skills.

Credits: 0.5-3

PHAR 640 - THERAPEUTIC DRUG MONITORING

This course is designed to provide a broad perspective on the emerging field of pharmacogenomics and its application to alterations of drug pharmacokinetics and pharmacodynamics, therapeutic drug monitoring and applications for pharmacotherapy of various diseases, including, but not limited to, those affecting cardiovascular, endocrine, hematologic, nervous, respiratory, renal, and immune systems, and cancer.

Credits: 3

PHAR 642 - PHARMACY PRACTICE RESEARCH IN AMBULATORY CARE

Pharmacy practice research focuses on pharmacist care and its effect on patient outcomes. This research course will provide students with a working knowledge and hands-on experience of conducting pharmacy practice research in ambulatory care. Students in this course will be exposed to all components of research in pharmacy practice. Each week, focus will be placed on a different aspect of research – Idea generation, Literature review, Proposal development, Data collection tool development, IRB submission, Data collection, Data entry and analysis, Abstract writing and Presentation.

Credits: 0.5-2

PHAR 643 - PROFESSIONAL PRACTICE II AND IPPE

Introductory Pharmacy Practice Experiences (IPPEs) foundations are a sequence of internship activities that provide a number of experiential activities that integrate knowledge and skills you will be learning within your didactic courses. The continuum will serve as building blocks to prepare you for Advanced Pharmacy Practice Experiences. The learning activities will take you into authentic settings to develop important professional skills.

Credits: 3

PHAR 644 - PROFESSIONAL PRACTICE III AND IPPE

Credits: 3

PHAR 645 - PHARMACY LAW

Students will learn about the history of pharmacy laws and how these laws structure practice guidelines and impact the distribution/dispensing of drugs. Students also learn about state and local statutes concerning pharmacy practice and healthcare policies relevant to pharmacy practice. The course includes an introduction to law, the Constitution, the role of laws/regulations, judicial system and process, and administrative agencies, with emphasis on the regulation of business and pharmacy practice.

Credits: 2

PHAR 646 - INTRODUCTION TO PHARMACEUTICAL INDUSTRY-PHARMACIST OPPORTUNITIES IN MEDICAL AFFAIRS

This course is designed to help students gain a better understanding of pharmacist career opportunities within pharmaceutical industry with an emphasis on Medical Affairs functions. Students will also gain insight on roles outside of Medical Affairs and understand how these key functions work together in a compliant and effective manner. Students in this class will participate in instructor led didactic sessions, guest panel discussion, and group project work. All students will be expected to participate and present a group project that will incorporate key learnings from the course sessions, panel discussions, and individual study.

Credits: 0.5-3

PHAR 650 - PRACTICE MANAGEMENT

This course introduces Pharmacy students to various management roles in Pharmacy Practice with the aim of preparing healthcare leaders that will deliver safe, effective and efficient care across different settings. Students will develop a strong foundation in management sciences with application and integration of Medication Therapy Management (MTM). Credits: 2,3

PHAR 652 - HEALTH ECONOMICS & OUTCOMES

This course is designed to introduce students to the concepts and methods of health economics and outcomes assessments and its application to pharmacy practice. This course will help students understand the concepts and methods of economic analyses and its role in clinical decision making, provide a brief review of decision modeling techniques; introduce to the concepts and importance of medication adherence, patient satisfaction, quality of life and health related quality of life in health care.

Credits: 2

PHAR 655 - POST-GRADUATE TRAINING

This course will educate and prepare students for postgraduate residency training. It will expose you to different postgraduate training opportunities including community pharmacy residencies, ambulatory care residencies and fellowships. It will increase knowledge, interest, and confidence among students about residency training and identify and develop the skills needed for application to these programs.

Credits: 1,1.5

PHAR 657 - PUBLIC HEALTH/HEALTH POLICY

This course presents the basic and critical issues in public health within the context of population healthcare and an in-depth discussion of the role of pharmacy professionals in promoting and protecting the health of the public. In order to address public health needs, pharmacists must understand and address the fundamental determinants of health in a population in order to provide effective health promotion, disease prevention, and quality health services. This course focuses on strategies for the identification and management of the healthcare needs of specific populations.

Credits: 2

PHAR 670 - PRF. PRACTICE IV AND IPPE

Professional Practice IV & Introductory Pharmacy Practice Experiences (IPPEs) are an 80 hour sequence of internship activities (total of 240 hours) which provides a number of experiential activities that integrate knowledge and skills you will be learning within your didactic courses.

The continuum will serve as building blocks to prepare you for the advanced practice experiences. The learning activities will take you into authentic settings to develop important professional abilities.

Credits: 0.5-3

PHAR 694 - BUSINESS PLAN INDEPENDENT STUDY

Create a comprehensive business plan supporting/enhancing the practice of pharmacy. Search out mentorship from pharmacists who have an interest in sharing how to expand pharmacy services.

Credits: 0.5-2

PHAR 695 - INDEPENDENT STUDY

This course will expose a pharmacy student to research designs and application in social and behavioral, or clinical pharmacy. The student will work with a course instructor on a project that will provide hands-on experience with research methods, data collection, analysis and reporting. The student will be provided with tools and any resources necessary to conduct such research.

Credits: 1,1.5

PHAR 696 - THESIS RESEARCH

The research course is focused on the student developing a research proposal with their advisor on a topic selected by the advisor. Areas of investigation include pharmacology, pharmaceuticals, and medicinal chemistry. Under supervision of the advisor, the student will generate and experimentally evaluate hypotheses, and work towards developing their thesis. The student will then present their work to the research committee, including their advisor, as a final assessment.

Credits: 4.5

PHAR 700 - ADVANCED DISEASE MANAGEMENT

This course is designed to review and assess clinical knowledge, skills and concepts learned in previous courses throughout the curriculum in preparation for Advanced Pharmacy Practice Experience rotations. The course will focus on accessing and interpreting appropriate clinical practice guidelines, patient assessment, communication, clinical decision making and documentation of patient assessment and therapeutic recommendations.

Credits: 3

PHAR 701 - INTEGRATED SEQUENCE IX

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration.

Credits: 3

PHAR 702 - INTEGRATED SEQUENCE X

The Integrated Sequence is a comprehensive series of ten sequential courses designed to integrate the principles of medicinal chemistry, pharmacology, and pharmacotherapeutics. The courses are centered around the study of diseases and their treatment. Courses vary by credit hour and duration.

Credits: 3

PHAR 703 - CLINICAL PHARMACOKINETICS

This course is designed to provide a broad perspective on the emerging field of pharmacogenomics and its application to alterations of drug pharmacokinetics and pharmacodynamics, therapeutic drug monitoring and applications for pharmacotherapy of various diseases, including, but not limited to, those affecting cardiovascular, endocrine, hematologic, nervous, respiratory, renal, and immune systems, and cancer.

Credits: 2.5

PHAR 712 - DOSAGE FORM DESIGN AND ADVANCED CALCULATIONS

This course is designed to cover calculations pertaining to dosage form design that is not covered in the PharmD. curriculum. In addition, the student will have the opportunity to serve as a tutor for PHAR 519 students and design educational materials. Group meetings will take place weekly to discuss challenges and teaching opportunities.

Credits: 1,1.5

Course Notes: No additional credit granted for PHAR 712 as ADV PHARM CALCUL DOSAGE FORM

PHAR 714 - MEDICINE OR MENACE

This course is designed to introduce students to the historic, social, recreational and therapeutic aspects of psychedelic drugs. Through lecture, video and recommended readings, students will gain an understanding of how psychoactive compounds have been utilized by various cultures over time and how alterations in the legal status of these drugs impact those groups as well as society in general. Additionally, students will be introduced to and asked to evaluate current research involving the potential therapeutic uses of psychoactive compounds. This course combines lecture with significant student participation in discussion sessions facilitated by faculty.

Credits: 0.5-2

PHAR 715 - IMPULSIVITY, MORAL JUDGEMENTS, HARM AVERSION, FAIRNESS, & RECIPROCITY: INTRODUCTION TO NEUROSCIENCE

This course is designed to introduce students to behavioral neuroscience, a rapidly growing area for new drug development. It will focus on neuronal mechanisms underlying behaviors associated with neurological and behavioral disorders. It complements discussions of various aspects of central nervous system in the core curriculum, particularly those in PHAR 634: Neurological disorders, and PHAR 635: Psychiatric and behavioral disorders, and expands these discussions to include behaviors. It is also designed to stimulate students to seek advanced studies of the CNS with a focus on behavioral neuroscience. Current pharmacy curriculum lacks sufficient depth in behavioral neuroscience and an additional expectation is that this course partially addresses this deficiency.

Credits: 2,3

PHAR 731 - RESEARCH PROJECTS IN NEUROSCIENCE

This course provides opportunities for students to improve their knowledge, abilities, and skills in neuroscience by completing a research project focused on recent developments in the treatment of CNS disorders. The research project consists of completion of an assignment on required reading, conducting focused, guided literature search, selecting, and analyzing articles, preparing weekly search reports, and presenting key findings to internal and external audience.

Credits: 1-3

PHAR 750 - HEALTH OUTCOMES RESEARCH

This elective course is designed to offer students hands on research experience in the area of health outcomes research. Students will work closely with the instructor(s) in developing a new research proposal or work on an ongoing research project. Students' will be presented with the opportunities of applying the concepts and principles of pharmaceconomics and health outcomes that they learned in their didactic coursework (PHAR 652) and gaining research skills in this area.

Credits: 0.67-3

PHAR 752 - INTERNAL MEDICINE/CLINICAL RESEARCH ELECTIVE

This course will expose a pharmacy student to perform literature evaluation on a clinical research topic and submit and present (upon acceptance) a student poster on the literature search findings at a national meeting. The student will work with the course faculty on a project that will provide hands-on experience with research methods, data summarization and evaluation, preparing and submitting an abstract at a national meeting. The student will be provided with tools and any resources necessary to complete this project.

Credits: 3

PHAR 754 - NUCLEAR PHARMACY

This course will expose the student to topics in nuclear pharmacy and nuclear medicine. During the course the student will be provided with the fundamentals that nuclear pharmacists encounter while meeting the NRC criteria to handle radiopharmaceuticals.

Credits: 1,1.5

PHAR 758 - CLIN. CASES IN ANTITHROMBOTIC

This course will provide students with a working knowledge of basic and advanced pharmacotherapeutic problems related to antithrombotic and antiplatelet therapy. Students in this class will participate in discussions of cases of real patients on antithrombotic or antiplatelet agents. Each week, cases will focus on a different aspect of antithrombotic/antiplatelet management. All students will be expected to lead at least one discussion, as well as actively participate in weekly discussions.

Credits: 0.5-3

PHAR 765 - VETERINARY PHARMACY

Veterinary Pharmacy provides a foundation for a pharmacist interested in providing care to nonhuman patients. It focuses on the care of dogs and cats, but concepts can be applied to other species. Veterinary pharmacy references, legal aspects of dispensing, and unique physiologic and pharmacokinetic differences among species will be highlighted. Prevention and management of common disease states will be addressed. Other topics include drug administration, zoonotic infections, dog bite prevention, immunizations, triage, wound care, and appropriate use of OTCs. Class periods will feature a combination of lecture, student research, and skills. Pets will be present in several class sessions.

Credits: 3

PHAR 770 - ADVANCED PHARMACY PRACTICE EXPERIENCE APPE

Students will apply the facts, information and concepts gained in didactic coursework to professional practice through practical experience under the supervision of a licensed pharmacist in a community pharmacy setting. The Community Pharmacy Practice rotation encompasses medication dispensing and control, communicating with patients, prescribers, and other health care professionals and understanding the basic principles of managing workflow to deliver positive patient outcomes. Community pharmacists are the most visible and available to the public. This rotation develops student competence to provide pharmaceutical care in the community setting and extends students' image of community pharmacy practice beyond traditional dispensing. This experience contributes to the integration of clinical knowledge and skills with the basics of communication, medication dispensing and control.

Credits: 5.5

PHAR 771 - ADVANCED PATIENT CARE - HOSPITAL

Students will apply the facts, information and concepts gained in didactic coursework to professional practice through practical experience under the supervision of a licensed pharmacist in a hospital pharmacy setting. The hospital rotation help students integrate knowledge and theoretical concepts across the curriculum in an environment that encourages and requires interactions between students, preceptors and patients. Our goal is to enable students to safely and accurately perform the activities associated with the receipt, preparation and dispensing of medication orders, perform required drug control activities, support the mission of the pharmacy department and activities that maintain productive relationships with other departments in the hospital.

Credits: 5.5

PHAR 772 - ADVANCED PATIENT CARE-AMBULATORY CARE

Students will apply the facts, information and concepts gained in didactic coursework to professional practice through practical experience under the supervision of a licensed pharmacist in an ambulatory care setting. The ambulatory care rotations rotation helps students integrate knowledge and theoretical concepts across the curriculum in an environment that encourages and requires interactions between students, preceptors and patients. Our goal is to enable students to provide safe, effective and cost-efficient disease state management by assuring the safe, accurate preparation and dispensing of medications, developing patient-specific pharmacotherapy plans and optimizing patients' outcomes. Students should gain experience in treating common disease states in the ambulatory care environment, including but not limited to endocrine disorders, cardiovascular diseases, commonly occurring outpatient infectious diseases, respiratory diseases by taking patient histories, developing patient-specific recommendations, providing counseling, monitoring patient outcomes and consulting with other healthcare providers.

Credits: 5.5

PHAR 773 - ADVANCED PATIENT CARE-ACUTE CARE MEDICINE

Students will apply the facts, information, and concepts gained in didactic coursework to professional practice through practical experience under the supervision of a licensed pharmacist in a hospital setting. The adult internal medicine advanced practice rotation requires students to integrate knowledge and theoretical concepts across the curriculum in an environment that requires appropriate interactions between students, preceptors, other healthcare professionals, and patients. The goal is to enable students to recommend and provide safe, effective, and cost-efficient patient care by developing evidence-based, patient-specific pharmacotherapy plans that optimize patient outcomes and have the support of the other healthcare practitioners involved. Students should gain experience in treating common disease states in the adult internal medicine population, including but not limited to endocrine disorders, cardiovascular diseases, infectious diseases, respiratory diseases, and renal/liver dysfunction.

Credits: 5.5

PHAR 774 - APPE ELECTIVE ROTATION I

Special Populations electives (APPEs) provide students the opportunity to study a pharmacy practice specialty area in a more in-depth manner. These experiences encompass a variety of practice areas and settings. Examples of these electives include but are not limited to medicine sub-specialties such as infectious diseases, oncology, neurology, specialty infusion and cardiology. Other opportunities include emergency department practice, critical care, drug information, and surgery. The student will develop an understanding of the signs and symptoms, pathophysiology, complications, and pharmacotherapy of the diseases encountered in special populations practice settings. Using this knowledge, the student will develop and sharpen clinical skills to provide desired medication management outcomes for patients. These electives require that the student function in a team with a broad range of other healthcare professionals.

Credits: 5.5

PHAR 775 - APPE ELECTIVE ROTATION II

The student will develop an understanding of the role of the pharmacist, and gain knowledge and skills to manage resources and daily operations applicable to the specific elective rotation site. The preceptor will provide student site-specific objectives on the first day of the APPE.

Credits: 5.5

PHAR 777 - DOCTOR OF PHARMACY SEMINAR

This course is designed to evaluate the general practice knowledge of students about to graduate pharmacy school, assess students' competence prior to practicing as a licensed pharmacist, and prepare students to succeed on board examination.

Credits: 0.5-1