

Course Descriptions

School of Pharmacy (effective October 2020)

PHA 300 **Quantitative Laboratory Techniques** **Lab. 2./Credit 2.**

This course will introduce the theory of the classical and modern laboratory to accurately determine the concentration, amount, or percentage of one or more elements of pharmaceuticals. The course content will cover the following areas: 1) laboratory skills in design and in performing a quantitative chemical and biological analysis; 2) the technique in laboratory data collection and recording in pharmaceutical laboratories; 3) Importance of accuracy and precision of laboratory results; and 4) the interpretation and critical evaluation of the experimental results.

PHA 303 **Introduction to Pharmacy Practice** **Lec. 2./Credit 2.**

This course provides the student with an introduction to pharmacy practice experiences. Students will be exposed to developmental topics, learn how the pharmacy runs, and become oriented to the workflow and layout of the dispensing area, all of which prepare students for their Introductory Pharmacy Practice Experiences. This course will also serve as an introduction to over-the-counter medications and products as well as the top 200 drugs.

PHA 305 **Applied Human Physiology** **Lec. 3./Credit 3.**

This course will introduce the fundamental principles of human physiology. Concepts are reviewed using systems-based approach, with particular emphasis on cellular physiology, neuroendocrine, renal, and cardiovascular system physiology. Basic principles of pathophysiology and human disease will be introduced.

PHA 307 **Principles of Pharmacology** **Lec. 1./Credit 1.**

This course will provide students with a fundamental understanding of how medications interact with biological systems as well as the basic rationale behind the design and utilization of drugs in disease states. An introduction to core principles of pharmacology will be discussed, including receptor biology and signal transduction pathways, basic pharmacokinetics and pharmacodynamics, routes of administration, drug metabolism and transport, drug therapy in special population, principles of drug targeting and drug development and basic pharmacogenomics.

PHA 308 **Pharmacology & Pathophysiology I** **Lec. 4./Credit 4.**

This sequence of courses are organized by disease states/organ systems and provide each student with basic knowledge of pathophysiology and pharmacology, thus enabling them to manage disease states, establish rational treatment and realistic outcomes, and provide parameters to monitor the progression of disease.

PHA 310 **Medical Immunology** **Lec. 2./Credit 2.**

This course will discuss the function of the immune system, including mechanisms of human immune function, and the immunologic basis of oncologic and autoimmune diseases, immunodeficiency, hypersensitivities and allergic reactions.

PHA 311 Physiological Chemistry Lec. 3./Credit 3.

This course provides an overview of the chemical and physical properties of biomolecules, including carbohydrates, proteins, enzymes, lipids, nucleic acids, and vitamins. It focuses on the relationship of organic functional groups to these properties and their role in the activity of drugs. The course also focuses on intermediary metabolism and chemical interconversions in living systems.

PHA 312 Drug Discovery, Design, and Development Lec. 3./Credit 3.

This course will provide students with a fundamental knowledge of drug discovery, design, and development with a pre-clinical focus. This knowledge includes both conventional, historical, and contemporary approaches to sourcing and developing new drugs, from natural sources through to rational drug design, lead optimization, and both in vitro and in vivo screening approaches for drug efficacy and safety, including computer-based methods, combinatorial chemistry, and high-throughput screening.

PHA 314 Medicinal Chemistry I Lec. 4./Credit 4.

The focus of this two-course sequence is the chemistry of natural and synthetic drug entities, their physicochemical properties, methods of synthesis, sources, derivatives, modes of biotransformation, and structure activity relationships. In this course, a concerted effort is made to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles. Prerequisites: PHA 314 Successful completion of PHA 311

PHA 315 Pharmacists' Patient Care Process (PPCP) Lec. 3./Credit 3.

This course will introduce the concept of patient-centered care, and how to apply the pharmacists' patient care process to optimize health and medication outcomes. The particular focus of this course will be on collecting and assessing subjective patient data, including developing patient interviewing skills, review of health records and methods of medical documentation, with an emphasis on the importance of utilizing the data to formulate, implement, and follow-up on a care plan.

PHA 316 Principles of Drug Information Lec. 3./Credit 3.

Drug information and informatics will be the primary focus of this course. Principles of drug information, drug information retrieval and analysis, literature evaluation, and verbal and written communication skills will be emphasized. Students will be able to utilize the drug information skills learned in this course to provide optimal pharmaceutical care in any pharmacy practice setting.

PHA 317 Pharmaceutical Analysis Lab. 3./Credit 3.

This course explores the fundamentals of pharmaceutical analysis techniques and their applications in pharmaceutical research and development (both academic and industrial). Students receive a solid conceptual ground to understand the utility of particular analytical methods. It enables students to evaluate instrumentation choices when needed critically and to select the appropriate tools.

PHA 318 **Responsible Conduct of Research** **Lec. 1./Credit 1.**

This course familiarizes students with fundamental ethical issues in research. Course goals include 1) gaining insights into responsible conduct of research, 2) acquiring knowledge on how to address the ethical problems appropriately, and 3) comprehending ethical issues and how to mitigate these situations. The seminars explore the best practices in research and experimental design, authorship, data management and record-keeping, intellectual property and ownership of data, as well as research misconduct and rigor and transparency, and discussion sessions focusing on ethical considerations for human and animal research subjects, conflicts of interest, mentoring, collaborations, peer review, laboratory safety, and research training, and environmental and societal impacts of scientific research. Note: This course meets or exceeds recent NIH Updates on the Requirement for Instruction in the Responsible Conduct of Research (NOT-OD- 10-019; requirements for instruction in the responsible conduct of research.

PHA 319 **Pharmaceutical Calculations I** **Lec. 2./Credit 2.**

Pharmaceutical Calculations I will provide students with their first exposure to basic pharmaceutical calculations. This course is designed to provide students with information about basic medication orders/prescriptions and the mathematical calculations and abbreviations needed for interpretation of prescriptions.

PHA 326 **Pharmaceutical Calculations II** **Lec. 1./Credit 1**

This course will continue to develop student knowledge by application of basic pharmaceutical calculations. Also, students will be introduced to basic clinical and pharmacokinetic calculations.

PHA 370 **Community IPPE** **Credit 1.**

An introductory pharmacy practice experience (IPPE) designed to assist the student in actively participating in and experiencing the distributive functions of pharmacy in the community pharmacy practice setting. The community pharmacy practice setting experience is divided into six main areas of experience: prescription processing and compounding, over the counter products, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/education. Prerequisites: Successful completion of all P-1 level didactic courses.

PHA 371 **Biopharmaceutics I** **Lec. 3./Credit 3.**

This course is designed to help students to understand physico-chemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 373 **Biopharmaceutics I Lab** **Lab. 3./Credit 1.**

This course is designed to help students to understand physico-chemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 372 **Biopharmaceutics I** **Lec. 3./Credit 3.**

This course is designed to help students to understand physico-chemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 374 **Biopharmaceutics I Lab** **Lab. 3./Credit 1.**

This course is designed to help students to understand physico-chemical and biological factors, which affect the stability, kinetics, bioavailability and bioequivalence of drugs in dosage forms. It will also focus on the design, preparation, evaluation and use of liquid dosage forms. Calculations, metrology, and laboratory exercises are also emphasized.

PHA 399 **Research Capstone** **Credit 0.**

Capstone course designed to provide students with an opportunity to demonstrate their knowledge and apply theory to practice through a practical experience in a research environment.

PHA 405 **Pharmacology & Pathophysiology II** **Lec. 4./Credit 4.**

This sequence of courses are organized by disease states/organ systems and provide each student with basic knowledge of pathophysiology and pharmacology, thus enabling them to manage disease states, establish rational treatment and realistic outcomes, and provide parameters to monitor the progression of disease.

PHA 406 **Pharmacology & Pathophysiology III** **Lec. 4./Credit 4.**

This sequence of courses are organized by disease states/organ systems and provide each student with basic knowledge of pathophysiology and pharmacology, thus enabling them to manage disease states, establish rational treatment and realistic outcomes, and provide parameters to monitor the progression of disease.

PHA 410 **Therapeutics I** **Lec. 3./Credit 3.**

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The first course in this series will review selected diseases of the gastrointestinal system and nutrition, and discuss strategies for patient evaluation and treatment.

PHA 412 **Therapeutics II** **Lec. 3./Credit 3.**

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The second course in this series will review selected neurological and psychiatric diseases, and discuss strategies for patient evaluation and treatment.

PHA 413 Medicinal Chemistry II Lec. 4./Credit 4.

The focus of this two-course sequence is the chemistry of natural and synthetic drug entities, their physicochemical properties, methods of synthesis, sources, derivatives, modes of biotransformation, and structure activity relationships. In this course, a concerted effort is made to link the chemical structure of drugs to their pharmacological/pharmacokinetic/toxicity profiles. Prerequisites: PHA 413 Successful completion of all P-1 level courses.

PHA 415 Pharmacists' Patient Care Process (PPCP) Lec. 3./Credit 3.

This course will introduce the concept of patient-centered care, and how to apply the pharmacists' patient care process to optimize health and medication outcomes. The particular focus of this course will be on collecting and assessing subjective patient data, including developing patient interviewing skills, review of health records and methods of medical documentation, with an emphasis on the importance of utilizing the data to formulate, implement, and follow-up on a care plan.

PHA 416 Biostatistics and Research Methods Lec. 3./Credit 3

This course introduces students to the basic concepts of biostatistics and research. Basic concepts will include understanding the research question, hypothesis, methodology, data collection and analysis, results, and conclusion. Students will develop and write a mini proposal that encompasses these basic principles. This proposal will be implemented and completed by the end of the course. Students will also gain experience with writing abstracts and developing scientific posters to present findings of research studies. Prerequisite: Successful completion of all P-1 level courses.

PHA 417 PPCP Skills Lab Lab 3./Credit 1.

This course will develop knowledge and skills in pharmacist patient assessment techniques. Students will learn to perform basic patient subjective and objective assessment related to provision of patient care, including patient interviewing, obtaining medical history, vital signs assessment, and point-of-care testing.

PHA 418 Applied Therapeutics Laboratory I Lab. 3./Credit 1.

In this course series, students will apply knowledge of the pharmacist's patient care process to formulate, implement, and follow-up on a care plan for the disease management of patient case-based scenarios across a variety of clinical settings. Disease states discussed will be integrated with concurrent topics assessed in the Therapeutics I—II course series. As the course series progresses, increasing complexity will be applied, incorporating comorbidities and complicated patient courses based on previously acquired pharmacotherapy knowledge.

PHA 420 Principles of Toxicology Lec. 2./Credit 2.

This course provides the basic concepts of toxicology. This course also serves to alert pharmacy students to commonly occurring exposures; to instruct students as to what symptoms are presented and the actions or recommendations to make in instances of accidental poisoning.

PHA 432 [Healthcare Administration I](#)

[Lec. 2./Credit 2.](#)

This course focuses on the structure and organization, delivery, regulation, and financing of the American healthcare system. Pharmacy, its role and responsibilities in the healthcare system, public health, and its interaction with other health occupations is discussed. Reimbursement issues in healthcare are introduced and implications upon the practice of health care are discussed. This course covers the functions of management and administration (planning, organization, staffing, direction, and controlling) applied to pharmacy practice in the community and institutional settings. Contemporary management principles for the solution of these problems are discussed, in addition to introduction to basic management principles and methods; and entrepreneurial, social and economical aspects of practice. Prerequisite: Successful completion of all P-1 level courses.

PHA 433 [General Pharmacology I](#)

[Lec. 3./Credit 3.](#)

This course provides students with a fundamental understanding of how medications interact with biological systems as well as the primary rationale behind the design and utilization of drugs in disease states. The course content will focus on the core principles of pharmacology. Topics include receptor biology and signal transduction pathways, basic pharmacokinetics and pharmacodynamics, routes of administration, drug metabolism and transport, drug therapy/toxicology in special populations, principles of drug targeting and drug development, and basic pharmacogenomics.

PHA 434 [General Pharmacology II](#)

[Lect 3./Credit 3.](#)

The course provides each student with basic knowledge of pathophysiology and pharmacology, organized by disease states and organ systems. This approach enables students to manage disease states, establish rational treatment and realistic outcomes, and provide parameters to monitor the progression of the disease.

PHA 461 [Pharmacokinetics](#)

[Lec. 4./Credit 4.](#)

This course is designed to provide the essential skills for employing pharmacokinetic principles in the selection and evaluation of drug therapy. It will focus on principles of drug therapy, evaluation, selection, and therapeutic monitoring with emphasis on clinically functional approaches to the design of dose regimens, and pharmacokinetics of select drugs in special patient populations and disease states. This course includes a required calculations laboratory period. Prerequisite: Successful completion of all P-1 level courses.

PHA 462 [Pharmacokinetics Laboratory](#)

[Lab. 3./Credit 1.](#)

This course is designed to provide the essential skills for employing pharmacokinetic principles in the selection and evaluation of drug therapy. It will focus on principles of drug therapy, evaluation, selection, and therapeutic monitoring with emphasis on clinically functional approaches to the design of dose regimens, and pharmacokinetics of select drugs in special patient populations and disease states. This course includes a required calculations laboratory period. Prerequisite: Successful completion of all P-1 level courses.

PHA 470 Institutional IPPE Credit 1.

An introductory pharmacy practice experience (IPPE) designed to assist the student in actively participating in and experiencing the distributive functions of pharmacy in the institutional pharmacy practice settings. The institutional pharmacy practice experience is divided into seven main areas of experience: drug distribution, manufacturing activities, dissemination of drug and product information, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/ education. Prerequisites: Successful completion of all P-2 level didactic courses.

PHA 499 Research Externship Credit 1.

By arrangement with a selected research setting, students engage in a supervised research experience.

PHA 501 Pharmaceutical Care V Lec. 3./Credit 3.

This course is designed to familiarize the student with nonprescription drugs and products or over-the-counter medications. Emphasis will be placed on the pharmacology of the drugs, potential disease states in which the drugs are utilized, self-administration techniques, consideration in selection of a product, and patient counseling. Prerequisite: Successful completion of all P-1 and P-2 level courses.

PHA 511 Therapeutics IV Lec. 4./Credit 4.

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The third course in this series will review selected diseases of the respiratory system and cardiovascular system, and discuss strategies for patient evaluation and treatment.

PHA 513 Therapeutics IV Lec. 4./Credit 4.

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The fourth course in this series will review selected diseases of the renal system and endocrine system, and discuss strategies for patient evaluation and treatment.

PHA 515 Principles of Drug Design Lec. 2./Credit 2.

This course is designed to provide the interested student with specific information concerning those concepts and techniques involved in the identification and preparation of new drug entities. Successful completion of this course would provide the student with advanced knowledge concerning the chemical aspects of drug action and toxicity.

PHA 516 Therapeutics V Lec. 3./Credit 3.

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The fifth course in this series will review selected infectious diseases, and discuss strategies for patient evaluation and treatment.

PHA 517 **Applied Therapeutics Laboratory II** **Lab. 3./Credit 1.**

In this course series, students will apply knowledge of the pharmacist's patient care process to formulate, implement, and follow-up on a care plan for the disease management of patient case-based scenarios across a variety of clinical settings. Disease states discussed will be integrated with concurrent topics assessed in the Therapeutics III—IV course series. As the course series progresses, increasing complexity will be applied, incorporating comorbidities and complicated patient courses based on previously acquired pharmacotherapy knowledge.

PHA 518 **Therapeutics VI** **Lec. 3./Credit 3.**

This systems-based course series will develop student knowledge and skills for therapeutic management of disease, based on application of medicinal chemistry, pharmacology, physiology, and pathophysiology concepts. The final course in this series will review selected rheumatologic, hematologic, and oncologic diseases, and discuss strategies for patient evaluation and treatment.

PHA 520 **Applied Therapeutics Laboratory III** **Lab. 3./Credit 1.**

In this course series, students will apply knowledge of the pharmacist's patient care process to formulate, implement, and follow-up on a care plan for the disease management of patient case-based scenarios across a variety of clinical settings. Disease states discussed will be integrated with concurrent topics assessed in the Therapeutics V-VI course series. As the course series progresses, increasing complexity will be applied, incorporating comorbidities and complicated patient courses based on previously acquired pharmacotherapy knowledge.

PHA 522 **Toxicology and Poison Control** **Lec. 2./Credit 2.**

This course provides the basic concepts of toxicology. This course also serves to alert pharmacy students to commonly occurring exposures; to instruct students as to what symptoms are presented and the actions or recommendations to make in instances of accidental poisoning.

PHA 532 **Pharmacy Law and Ethics** **Lec. 2./Credit 2.**

The basic principles of law are reviewed as they relate to the practice under federal, state, and local regulation. The special problems involving the control of narcotics, poisons, and other controlled substances are reviewed. Some laws relative to business activities and discussions of professional ethics are also included. Prerequisite: Successful completion of all P-1 and P-2 level courses.

PHA 533 **Managed Health Care** **Lec. 2./Credit 2.**

This course is designed to introduce professional pharmacy students to the complexity of our health care delivery system and to provide fundamental information on management of pharmaceuticals in various payer segments. Emphasis will be placed on understanding the key players in the healthcare system, the fundamentals of formulary management, key issues that affect the pharmaceutical industry, and opportunities for pharmacists in managed care.

PHA 534 Pharmacogenomics

Lec. 2./Credit 2.

This course discusses how genes affect an individual's response to drugs. An understanding of pharmacogenomics requires dual understanding of the basics of genetics and pharmacology. Students will learn how individual genetic information can be used to tailor drugs to patients to maximize efficacy and minimize adverse drug reactions. Topics that will be covered include: fundamentals of pharmacogenomics, interpretation of pharmacogenomic test results, literature evaluation and use of evidence-based guidelines, case based scenarios and implementation of pharmacogenomics in health care settings.

PHA 535 Independent Study I

Ind./Credit 2.

The objectives of the course are to provide students with an opportunity to explore and analyze health care topics in depth. The exploratory aspect of the course requires students to perform and complete an independent project (of their choice with approval by the course coordinators) related to an administrative principle, concept of trend that currently impacts the profession of pharmacy. The analytical aspect of the course requires students to participate in weekly briefings that will discuss traditional and controversial pharmacy administration issues.

PHA 536 Independent Study II

Ind./Credit 2.

The objectives of the course are to provide students with an opportunity to explore and analyze health care topics in depth. The exploratory aspect of the course requires students to perform and complete an independent project (of their choice with approval by the course coordinators) related to an administrative principle, concept of trend that currently impacts the profession of pharmacy. The analytical aspect of the course requires students to participate in weekly briefings that will discuss traditional and controversial pharmacy administration issues. Students who complete PHA 535 must complete a different independent project for PHA 536.

PHA 539 Behavioral Psychology

Lec. 2./Credit 2.

The student is provided with an understanding of behavioral psychology and in particular the psychology of the chronically ill. The course attempts to improve the professionalism exhibited by students in their patient interactions and their associations with other members of the health care team.

PHA 545 Healthcare Administration II

Lec. 3./Credit 3.

This course will provide the students pharmacy management principles that relate to contemporary pharmacy practice and present an introduction to the fundamentals of health outcomes research and pharmacoeconomic analysis. The overall goals of this course are to familiarize the student and provide basic tools in order to develop and deliver patient-centered pharmaceutical care services. Students will be exposed to pharmacoeconomic articles and participate in discussions which will provide them with tools useful to address the difficulties associated with implementing programs. Through an active learning process, students will follow and interpret current issues that are shaping pharmaceutical and medical care as they discover the impact these events will have in shaping their future practice.

PHA 561 **Analytical Methods in the Pharmaceutical Sciences** **Lec. 2./Credit 2**

This course sequence is designed to provide the student the opportunity to learn various assay procedures and research methodologies in chemistry, pharmacology, chemotherapy, pharmaceuticals and enzymology.

PHA 562 **Clinical Pharmacokinetics** **Lec. 2./Credit 2.**

This course is designed to focus on strategies of developing and operating clinical pharmacokinetic or Therapeutic Drug Monitoring Services (TDMS). The course does not focus on manipulating pharmacokinetic equations to calculate drug dosages. It addresses the following areas: the environment in which the services are offered, the process involved in individualizing drug dosing, therapeutic/ pharmacodynamic monitoring and patient outcome assessment. The course will further address more detailed dosing concepts in special populations than provided in the foundation course in pharmacokinetics.

PHA 563 **Introduction to Public Health** **Lec. 2./Credit 2.**

The objective of this elective course is to provide students with an understanding of the concepts and the importance of public health as a science and its goal of maximum health for all. Students will gain a thorough understanding of public health promotion and disease prevention strategies especially relating to underserved, at-risk populations.

PHA 564 **Advanced Dosage Form Technology** **Lec. 2./Credit 2.**

This course will be concerned with the design, the technology, engineering principles and the biopharmaceutical aspects of non-sterile dosage forms. The course will guide the student from discovery of a new drug substance to the final delivery system. Initially the student will learn the physical-chemical information required by the industrial formulator, how it is collected and how it is used to decide on the final dosage forms.

PHA 570 **Elective IPPE** **Credit 1.**

The elective introductory pharmacy practice experience (IPPE) is designed to expose students to additional areas of pharmacy practice. Elective opportunities are available in administration, association management, consulting, disease state management, geriatrics, home health, managed care, nuclear pharmacy, nutrition, oncology, pharmaceutical industry, regulatory affairs, and toxicology. Other elective opportunities are available upon approval by the Director of Experiential Education. Prerequisites: Successful completion of all P-1, P-2 and P-3 level didactic courses.

PHA 572 **Alternative Medicine** **Lec. 2./Credit 2.**

This course is designed to provide the student with a basic knowledge about alternative practices used by patients as a self-medication option or in conjunction with physician ordered procedures in the United States as well as in other countries. The course's approach is to present pharmacy students with the intellectual foundations and tools to understand the great diversity among different cultures in their self-medication practices. The student will be exposed to current information on herbs that are available in U.S. pharmacies so they can offer counseling to patients on the risks and benefits of using alternative medicine.

PHA 574 Pharmacy Practice Lab Lab 4./Credit 4.

This laboratory experience will simulate the actual practice of pharmacy in both retail and institutional settings. Students will learn the fundamentals of processing and filling a prescription or doctor's drug order. He or she will gain experience in compounding medications, preparing sterile products, recommending over-the-counter medications, and counseling patients.

Prerequisite: Successful completion of all P-1, P-2 level courses, and P-3 Fall semester courses. Exceptions to this prerequisite policy will only be granted at the Dean's discretion.

PHA 576 Nuclear Pharmacy Lec. 2./Credit 2.

This course focuses on the study of radionuclides, their characteristics and detection, including the physics of radioactive decay, in-depth study of the interaction of radiation with matter and the primary means of detection. Emphasis is placed on the radio-nuclides used in medicine. Mathematics, as it pertains to the measurement of radioactivity, and the phenomena decay are covered in detail. Radiation protection and health physics are discussed as they apply to the practice of nuclear pharmacy.

PHA 577 Natural Products Lec. 2./Credit 2.

This course encompasses a study of drugs obtained from natural sources. The botanical and animal origins of such drugs, their historical importance, physiochemical properties, and their pharmacological applications are discussed. Basic terminology associated with the area of pharmacognosy as well as extraction and purification procedures for natural drugs are also discussed.

PHA 582 Drugs of Abuse Lec. 2./Credit 2.

This course is designed to give the student a basic introduction to the area of substance abuse and dependency. It is intended that upon completion of this course the student will have an appreciation for the terminology and diagnostic criteria appropriate to this area.

PHA 587 Health Disparities and Service Learning Lec. 2./Credit 2.

Students will become familiar with the nation's agenda for health improvement of its citizens. They will learn about health disparities in general, and focus on the six leading disparities identified in President Clinton's Health Initiative. Students will explore etiologies, statistics, severity, implications and possible solutions of the various disparities. Students will also be introduced to the concept of service learning and volunteerism in programs that target underserved populations. They will be shown how they can make a difference in their communities and the lives of the patients they serve.

PHA 590 Pediatric Pharmacotherapy Lec. 2./Credit 2.

The objective of the course is to present basic therapeutic principles and unique problems associated with pediatric drug therapy so that the students can more effectively participate in rational pediatric therapeutics.

PHA 592 Advance Nutritional/Metabolic Support Lec. 2./Credit 2.

In this course, the physiological theories of metabolic support in various disease states will be presented. This background information will be utilized by the students as they develop experience in assessing the patient's metabolic status, estimating the patient's nutritional requirements and formulating appropriate enteral or parenteral feedings.

PHA 594 Prescription Drug Therapy Review: Top 200 Drugs Lec. 2./Credit 2.

This course involves the study of the top 200 most commonly prescribed drugs. Students will learn trade names, generic names, available strengths, available dosage forms, appropriate dosing guidelines, common adverse drug reactions, patient counseling information and clinically significant drug-drug interactions.

PHA 595 Clinical Oncology Lec. 2./Credit 2.

This course provides an introduction to the pathology and treatment of neoplastic diseases with an emphasis on the patient and the application of clinical pharmacy concepts.

PHA 597 Geriatric Pharmacotherapy Lec. 2./Credit 2.

This course will review the basic physiological changes occurring with increasing age and define their impact on pharmacokinetics of drugs in the geriatric patient. Managerial, pharmaceutical, and consultant aspects of pharmacy services provided to long term care facilities and alternate types of care available to the elderly patient will be emphasized. Health care issues impacting geriatric patient care and future trends in pharmacy services for geriatric patients will also be presented. Students will attend geriatric case study presentations of senior Pharm. D. students and participate in discussions to gain experience with therapeutic uses.

PHA 650, 651, 652 Seminar I, II, III Sem. 1./Credit 1.

The Seminar Series is a three course requirement that is designed to provide students with the skills, techniques, and competencies required to successfully navigate the advanced clinical clerkship experiences. In addition this course provides the student an opportunity and experience in preparing and presenting pharmacy related topics to colleagues and other healthcare professionals in a formalized manner. Prerequisites: Successful completion of all P-1, P-2, and P-3 courses.

PHA 670 Community Pharmacy Practice Experience (APPE) Credit 4.

An advanced pharmacy practice experience designed to assist the student in actively participating and experiencing the distributive functions of pharmacy in the community pharmacy practice setting. The community pharmacy practice setting experience is divided into six main areas of experience: prescription processing and compounding, over the counter products, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/education. Prerequisite: Successful completion of P-3 level courses.

PHA 671 Institutional Pharmacy Practice Experience (APPE) Credit 4.

An advanced pharmacy practice experience designed to assist the student in actively participating and experiencing the distributive functions of pharmacy in the institutional pharmacy practice settings. The institutional pharmacy practice experience is divided into seven

main areas of experience: drug distribution, manufacturing activities, dissemination of drug and product information, patient counseling and education, pharmacy administration and management, pharmacy law, and team interaction/education. Pre- requisite: Successful completion of P-3 level courses.

PHA 672 **Community/Institutional Pharmacy Practice Experience (APPE) II** **Credit 4.**

An advanced pharmacy practice experience designed to assist the student in actively participating and experiencing the distributive functions of pharmacy in the community, institutional, or other pharmacy practice settings, which provide distributive services of pharmaceuticals (nuclear pharmacy, long-term care, mail order, etc.). The pharmacy practice experience is designed to provide additional experience in the following areas: prescription processing and compounding, over the counter medications, drug distribution, manufacturing management, pharmacy law, and team interaction/ education. Prerequisite: Successful completion of P-3 level courses.

PHA 683 **Geriatrics** **Credit 4.**

This course focuses on inpatient and/or outpatient experiences in the care of the elderly. Objectives will include developing medication care plans (MCP) for patients who have diminished blood flow in concert with multiple disease states, frailty of body and spirit, diminished mental capacity, diminished mobility, and reduction in use of senses (e.g. sight, hearing). Attention will also be focused on developing the most economical MCP for persons with reduced or limited income. Simultaneous assignment to several inpatient facilities, home health care agencies, or home bound patients is likely. An understanding of the impact of Medicare and other insurance plans on the ability to deliver the best MCP is an objective for all assignment areas. Prerequisites: Successful completion of all P-3 level courses.

PHA 685 **Administration/Management** **Credit 4.**

This course is designed to expose the student to a variety of situations related to the running of a medical-related operation, including medical profession associations. The student will be paired with an administrative level preceptor from industry, chain pharmacy, hospital pharmacy, or professional organization. The five week rotation may be split among as many as three such experiences with no less than one week in any specific arena. Prerequisites: Successful completion of all P-3 level courses.

PHA 690 **Internal Medicine I** **Credit 4.**

The Internal Medicine I advanced pharmacy practice experience is designed to provide the student exposure and experience in comprehensive treatment of disease states of adult patients being cared for in an institutionalized setting. In addition, students will utilize problem-solving skills, develop therapeutic plans, monitor lab values, and assess for drug interactions and adverse drug reactions. Prerequisites: Successful completion of all P-3 level courses.

PHA 691 Ambulatory Care I

Credit 4.

The Ambulatory Care I advanced pharmacy practice experience is designed to give students experience in treating patients who are typically not acutely ill in “out-patient” settings. These experiences could focus on the medication management of specific diseases (such as hypertension, diabetes, asthma, hyperlipidemia, etc.) or general care of patients with chronic conditions. Students will be involved in problem solving, patient medication counseling and therapeutic monitoring. In addition, they will address drug interactions, side effects, and compliance issues in the care of these patients. Prerequisites: Successful completion of all P-3 level courses.

PHA 692 Ambulatory Care II

Credit 4.

The Ambulatory Care II advanced pharmacy practice experience will focus on management of patients in specialized out-patient settings such as retail pharmacy, managed care, long-term care, home health care, and specialty clinics or programs. Prerequisites: Successful completion of all P-3 level courses.

PHA 693 Pediatrics

Credit 4.

The pediatric advanced pharmacy practice experience provides students with the opportunity to learn how to effectively treat medical illnesses of infant and child patients. Students will learn the different treatment options and regimens utilized in this patient population and take into consideration the different pharmacokinetic profiles of drugs in infants and children. Common disease states that will be seen are pneumonia, asthma, epilepsy, diabetes, sickle cell, trauma, and other common childhood diseases. Prerequisites: Successful completion of all P-3 level courses.

PHA 694 Psychiatry

Credit 4.

The psychiatric advanced pharmacy practice experience provides students experience in treating acute as well as chronic psychiatric patients. Emphasis is on the initiation of medication, therapeutic monitoring, as well as medication stabilization and long-term treatment of psychiatric patients. Students will learn how to dose, treat, and monitor patients with mood disorders, schizophrenia, substance abuse disorders, cognitive disorders and other clinical psychiatric disorders. Prerequisites: Successful completion of all P-3 level courses.

PHA 695 Drug Information

Credit 4.

This clerkship experience allows the student to serve as a primary provider of drug information in a structured environment that possesses both the resources and the faculty expertise in clinical information management and dissemination. Emphasis is placed on how to properly receive drug information requests, design and execute a systematic search strategy, assimilate the information retrieved, and formulate and communicate an appropriate response. The student continues to build their knowledge base of available drug information resources and gains practical experience in critically evaluating those resources. Students also prepare drug monographs and journal articles to further develop their medical writing skills. Prerequisites: Successful completion of all P-3 level courses.

PHA 696 Elective I

Credit 4.

The elective rotation is designed to expose students to additional areas of pharmacy practice of their interest. Elective opportunities are available in administration, association management, consulting, disease state management, geriatrics, home health, managed care, nuclear, nutrition, oncology, pharmaceutical industry, regulatory affairs, and toxicology. Other elective opportunities are available upon approval by the Director of Experiential Education.

Prerequisites: Successful completion of all P-3 level courses.

PHA 699 Internal Medicine II

Credit 4.

The Internal Medicine II advanced pharmacy practice experience is designed to provide the student exposure and experience in comprehensive treatment of disease states of adult patients being cared for in an institutionalized setting. In addition, students will utilize problem-solving skills, develop therapeutic plans, monitor lab values, and assess for drug interactions and adverse drug reactions. Furthermore, students will be exposed to specialized internal medicine areas, such as hematology/oncology, ICU, CCU, surgery, general oncology and infectious diseases. Prerequisites: Successful completion of all P-3 level courses.