College of Pharmacy

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  • Mary E. Ray

Associate Dean, Research and Graduate Programs
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  • Jay D. Currie

Head, Applied Clinical Sciences
  • James D. Hoehns

Head, Health Services Research
  • William R. Doucette

Managing Director, University of Iowa Pharmaceuticals
  • Dennis M. Erb

Undergraduate certificates: drug delivery; drug discovery; drug disposition and metabolism
Professional degree: Pharm.D.
Professional certificate: palliative care
Graduate degrees: M.S. in pharmacy; Ph.D. in pharmacy
Faculty: https://pharmacy.uiowa.edu/people
Website: https://pharmacy.uiowa.edu/

Courses

Students must be enrolled in the College of Pharmacy to enroll in professional-level (Pharm.D.) coursework numbered 8000-9999. Students who meet prerequisite requirements may register for the college’s undergraduate- and graduate-level courses numbered 1100-7999.

College of Pharmacy Courses

PHAR:1000 First-Year Seminar 1 s.h.
Small discussion class taught by a faculty member; topics chosen by instructor; may include outside activities (e.g., films, lectures, performances, readings, visits to research facilities).

PHAR:1100 Introduction to Pharmaceutical Sciences: Drug Development 1-2 s.h.
Introduction to drug discovery, development, and approval pathways used in the United States; specific focus on career pathways related to pharmaceutical development including the natural and biomedical sciences, clinical, regulatory and legal affairs, sales and marketing, and business development.

PHAR:1111 Need a New Drug? 1 s.h.
Introduction to drug discovery, development, and approval process in the United States; focus on preclinical and clinical development activities and role of the FDA and other regulatory bodies in approval and oversight of available drug products.

PHAR:1200 Medicines That Changed the World 1 s.h.
Herbal remedies and ancient traditional medicines have led to the discovery of life-saving drug therapies; as science has evolved, how the discovery of other important medicines have come about through advances in chemistry and biology and now through advances in computer science and informatics; students learn about the discovery history of some of the most important drug therapies of the 20th and 21st centuries and how those discoveries are leading to even more important, life-saving treatments.

PHAR:1812 What’s in My Medicine Cabinet? An Introduction to Over-the-Counter Medications and Self Care 2 s.h.
Introduction to nonprescription medications for treatment of minor illness and health maintenance; causes, signs, and symptoms of common ailments with information about selection of appropriate over-the-counter therapies and considerations for the need for further care; self-care strategies for disease prevention and wellness.

PHAR:3740 End-of-Life Care for Adults and Families 3 s.h.

PHAR:3994 Undergraduate Research in Pharmaceutical Sciences 1-4 s.h.
Individual scientific research conducted under the guidance of a faculty member.

PHAR:3995 Undergraduate Independent Study 1-4 s.h.
Supervised study. Requirements: enrollment in College of Pharmacy undergraduate certificate program.

PHAR:4146 Drug Disposition and Pharmacokinetics 2 s.h.
Introduction to drug absorption, distribution, and elimination processes controlling overall drug exposure in humans; basic quantitative measurements presented and used to demonstrate the influence of drug properties and physiologic action on drug disposition. Prerequisites: (MATH:1380 or MATH:1460 or MATH:1550 or MATH:1850) and (BIOL:1140 or BIOL:1141 or BIOL:1411 or BIOL:1412) and (STAT:1020 or PSQF:1020 or STAT:1030 or STAT:2010).

PHAR:4501 Basic Principles of Toxicology 3 s.h.
Basic principles and mechanisms of toxicology as it relates to drugs and environmental agents. Prerequisites: BIOC:3110.
PHAR:6504 Mastering Reproducible Science 1 s.h.
Training in methods for conducting rigorous and reproducible science; features an array of faculty who provide lectures and discussions based on their areas of expertise (i.e., research with animals, synthetic chemistry, high throughput screening, etc.) to provide broad exposure and training in these areas; critical evaluation of literature outside of student’s own specific field of study.

PHAR:6700 Advanced Pharmacokinetics and Pharmacodynamics 3 s.h.
Application of pharmacokinetics and pharmacodynamics principles in pharmaceutical research. Prerequisites: PHAR:8146 or PHAR:4146. Requirements: two semesters of calculus and one semester of statistics.

PHAR:6701 Stability of Pharmaceuticals 3 s.h.
Mechanisms of degradation of pharmaceuticals; prediction of shelf life of pharmaceuticals, stabilization. Prerequisites: CHEM:4432.

PHAR:6706 Equilibria Processes 3 s.h.
Equilibria pertaining to ionic systems, complexation, partitioning, solubility. Prerequisites: CHEM:2220 or CHEM:2240.

PHAR:6710 Pharmaceutics Graduate Seminar 1-2 s.h.
PHAR:6720 Pharmaceutics Research arr.

PHAR:7101 Principles of Experimental Therapeutics 3 s.h.
Introduction to key principles and concepts for research in experimental therapeutics; basic principles related to drug disposition, toxicity, and efficacy.

PHAR:7102 Applied Clinical and Translational Science 3 s.h.
Application of clinical and translational science in a multidisciplinary collaborative environment to develop, conduct, and report research.

PHAR:7331 Analytic Issues in Health Services Research II 3 s.h.
Continuation of HMP:7960; advanced applications, including panel data and qualitative response models. Prerequisites: HMP:7960. Same as HMP:7965.

PHAR:7701 Surface Phenomena arr.
Behavior of matter in phase boundaries, especially adsorptive processes at liquid-solid and vapor-solid interfaces. Prerequisites: CHEM:4431.

PHAR:7703 Transport Phenomena 3 s.h.
Diffusion and mass transport phenomena related to pharmaceutical systems.

PHAR:8130 Foundations of Pharmacy Practice I 4 s.h.
Introduction to contemporary pharmacy practice; small-group discussion, application of core concepts through active hands-on learning approaches; for first-year student pharmacists. Requirements: P1 standing.

PHAR:8131 Engagement: Professional Skills and Values 2 s.h.
Opportunity for student engagement in the College of Pharmacy prior to Professionalism Ceremony; development as a responsible partner in learning process by nurturing collaboration, leadership, service, compassion, community, self development, and social enrichment among students, faculty, and staff. Requirements: P1 standing.

PHAR:8132 Continuing Professional Development 1 s.h.
Engagement with profession of pharmacy and community through service and leadership activities, reflection; use of Continuous Professional Development Cycle (CPD) approach to learning. Requirements: P3 standing.

PHAR:8133 Introductory Pharmacy Practice Experience Career Exploration 1 s.h.
Hands-on exposure to various pharmacist career opportunities in four different pharmacy practice patient care settings; settings include practice areas and rotation types required for P4 Advanced Pharmacy Practice Experience (APPE) sites in community pharmacy, hospital pharmacy, ambulatory care/family practice, acute care medicine, and other elective practice settings; work with faculty mentor. Requirements: P1 standing.

PHAR:8134 Foundations of Health Services 3 s.h.
Foundation issues for pharmacist practice related to social, cultural, behavioral, economic, and organization design components of pharmacy care. Requirements: P1 standing.

PHAR:8135 Health Information Retrieval and Informatics 3 s.h.
Introduction and overview of health care information retrieval, organization, and dissemination; retrieval and organization of health information from pharmacy and medical primary and tertiary literature using secondary resources; knowledge and skills to manage, analyze, and legally share health information in electronic health records, pharmacy information systems, and automated systems. Requirements: P1 standing.

PHAR:8136 Foundations of Pharmaceutical Sciences 6 s.h.
Introduction and overview of foundations of pharmaceutical sciences. Requirements: P1 standing.

PHAR:8140 Foundations of Pharmacy Practice II 4 s.h.
Introduction to contemporary pharmacy practice for first-year student pharmacists; classroom methods include small group discussion-based and active hands-on learning approaches where students will apply core concepts.

PHAR:8141 Discovery I: Introduction and Background 3 s.h.
Create and disseminate new knowledge related to pharmacy or health care; broadly based scholarly effort with topics ranging from patient case studies, literature reviews, and analysis of pharmacy practice problems or basic research.

PHAR:8142 Foundations of Health, Wellness, and Disease 2 s.h.
Overview of the basic processes of good health and practices that promote wellness; emphasis on the mechanistic causes of human disease.

PHAR:8146 Foundations of Pharmaceutical Sciences III 2 s.h.
Continuation of PHAR:8137.

PHAR:8147 Foundations of Pharmaceutical Sciences IV 3 s.h.
Continuation of PHAR:8146.

PHAR:8148 Pharmacokinetics and Dose Optimization 2 s.h.

PHAR:8149 Foundations of Pharmacology and Toxicology 3 s.h.
Principles of pharmacology and toxicology.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR:8150</td>
<td>Foundations of Health, Wellness, and Disease</td>
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<td>Discovery I: Introduction and Background</td>
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<td>Creation and dissemination of new knowledge related to pharmacy or health care; broadly based scholarly effort with topics ranging from patient case studies, literature reviews, and analysis of pharmacy practice problems or basic research.</td>
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<tr>
<td>PHAR:8152</td>
<td>Fundamentals of Compounding</td>
<td>1 s.h.</td>
<td>Introduction to personalized drug delivery systems through the art of compounding.</td>
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<tr>
<td>PHAR:8153</td>
<td>Integrated Pharmacotherapy: Dermatology and Sensory</td>
<td>2 s.h.</td>
<td>Key elements of science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
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<tr>
<td>PHAR:8154</td>
<td>Integrated Pharmacotherapy: Endocrine</td>
<td>3 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8255</td>
<td>Discovery II: Design and Methods</td>
<td>arr.</td>
<td>Create and disseminate new knowledge related to pharmacy or health care with emphasis on design methods and data collection.</td>
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<tr>
<td>PHAR:8260</td>
<td>Integrated Pharmacotherapy: Cardiovascular</td>
<td>4 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8261</td>
<td>Integrated Pharmacotherapy: Neurology and Psychiatry</td>
<td>4 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8262</td>
<td>Integrated Pharmacotherapy: Oncology</td>
<td>3 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8263</td>
<td>Integrated Pharmacotherapy: Infectious Diseases</td>
<td>4 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8264</td>
<td>Discovery III: Data Collection and Results</td>
<td>1 s.h.</td>
<td>Create and disseminate new knowledge related to pharmacy or health care with emphasis on data collection and results.</td>
</tr>
<tr>
<td>PHAR:8265</td>
<td>Applications of Pharmacy Practice II</td>
<td>1 s.h.</td>
<td>Expands on skills and concepts taught in the foundations of pharmacy practice course series and includes skills relevant to the disease states in the specific integrated pharmacotherapy courses; taught using a variety of classroom methods including small group, discussion-based, and active hands-on learning approaches where students apply core concepts.</td>
</tr>
<tr>
<td>PHAR:8301</td>
<td>Introductory Pharmacy Practice Experience Clinical</td>
<td>1 s.h.</td>
<td>This third IPPE clinical is completed as an introduction to the Advanced Pharmacy Practice Experiences (APPE) to which student pharmacists are exposed during their P4 year; the IPPE clinical involves a P3 student observing and participating with a P4 student currently on an APPE rotation.</td>
</tr>
<tr>
<td>PHAR:8370</td>
<td>Integrated Pharmacotherapy: Respiratory and Allergy</td>
<td>3 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8371</td>
<td>Integrated Pharmacotherapy: Oncology and Hematology</td>
<td>3 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
</tr>
<tr>
<td>PHAR:8372</td>
<td>Integrated Pharmacotherapy: Gastroenterology and Nutrition</td>
<td>3 s.h.</td>
<td>Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.</td>
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</table>
PHAR:8373 Integrated Pharmacotherapy: Renal, Fluids, and Electrolytes 2 s.h.
Key elements of the science and practice of pharmacy presented in an integrated manner focused on particular organ systems or disease states.

PHAR:8374 Applications of Pharmacy Practice III 1 s.h.
Expands on skills and concepts taught in the foundations of pharmacy practice course series and includes skills relevant to the disease states in the specific aligned component courses; taught using a variety of classroom methods including small group, discussion-based, and active hands-on learning approaches where students apply core concepts.

PHAR:8375 Advanced Topics in Health Services 2 s.h.
Exploration of advanced topics in health service.

PHAR:8376 Discovery IV: Presentation of Results 1 s.h.
Dissemination and presentation of new knowledge related to pharmacy or health care with emphasis on design methods and data collection.

PHAR:8377 Integrated Pharmacotherapy: Capstone 4 s.h.
Capstone serves as a culminating academic and research project for students and mentors, integrating all areas of professional discovery.

PHAR:8378 Pharmacy Law and Ethics 2 s.h.
Topics include ethical behavior for pharmacists and student of pharmacy law.

PHAR:8379 Advanced Pharmacy Practice Experiences Preparation 1 s.h.
Guidance provided for advanced pharmacy practice experiences.

PHAR:8380 Learning Portfolio 1 s.h.
Compilation of student work.

PHAR:8387 Capstone: Skills-Based Assessment 1 s.h.
Further development of assessment skills.

PHAR:8400 Introductory Pharmacy Practice Experience Transitions 1 s.h.
This final IPPE transitions is completed as an introduction to the Advanced Pharmacy Practice Experiences (APPE) to which student pharmacists are exposed during the P4 year; student pharmacists work alongside a pharmacist preceptor to assist them in making a smooth transition to the APPE curriculum; students identify, collect pertinent information, evaluate, and document a patient case or problem encountered at a pharmacy practice site.

PHAR:8402 Pharm.D. Learning Portfolio II 1 s.h.
Students continue to demonstrate and document mastery of experiential and didactic coursework and assignments, as well as self-assessment of progression. Requirements: P4 standing.

PHAR:8500 Advanced Drug Literature Evaluation and Application 2 s.h.
Critical evaluation, utilization, and clinical application of drug literature.

PHAR:8501 Introduction to Nuclear Pharmacy 2 s.h.
Nuclear pharmacy as a specialty area of pharmacy practice that involves preparation of radioactive materials for patient administration.

PHAR:8502 Advanced Pharmacopalliation of Pain 2 s.h.
Exploration of symptom management across the trajectory of serious illness through a series of longitudinal patient cases.

PHAR:8503 Advanced Pharmacopalliation of Non-Pain Symptoms 3 s.h.
Terminal extubation, terminal agitation, discontinuing life sustaining therapies, and pharmacokinetic and pharmacetic issues in advanced illness.

PHAR:8504 Sustained Clinical Pharmacy Services 2 s.h.
Pharmacists may find themselves needing to justify their salary, the cost effectiveness of their pharmacy services, or may wish to create a new clinical service; introduction to pharmacists’ role in initiating and sustaining clinical services in the ambulatory setting; writing a business plan; identifying and communicating with key stakeholders; finding billable opportunities.

PHAR:8505 Advanced Topics in Infectious Disease, HIV, and Antimicrobial Therapy 2 s.h.
Topics in antimicrobial treatment of infectious diseases beyond those in the required pharmacy curriculum, including topics covered in the infectious disease therapeutics course; lectures, case discussion, class participation, and summary presentations of an uncommon organism or antimicrobial agent.

PHAR:8506 Health Informatics Essentials 2 s.h.
Health informatics as a multidisciplinary field that uses health information technology to improve health care services for patients.

PHAR:8507 Personal and Professional Transformation 2 s.h.
How to maximize personal and professional goals; focus on what students want to achieve in their personal and professional life.

PHAR:8508 Interprofessional Case Studies 2 s.h.
Interdisciplinary collaboration to formulate pharmacologic treatments of common diseases; case-based learning utilized with peer teaching; medical and pharmacy students revisit and share foundational science concepts from their disciplines, including mechanisms of health and disease and principles of pharmacokinetics and pharmacodynamics; discussions led by students and facilitated with a Carver College of Medicine clinician and a College of Pharmacy clinical pharmacist; students formulate treatment plans using the World Health Organization’s six step approach to good prescribing. Requirements: P3 standing.

PHAR:8509 Leaders Read: Servant Leadership 2 s.h.
Introduction to concepts from The Five Practices for Exemplary Leaders by Kouzes and Posner; overview of all five practices with focus on first practice of “Modeling the Way;” values and skills of servant leadership through reading, reflection, and discussion; servant leadership philosophy where the main goal of the leader is to serve, and exploration of why servant leadership is critical; students articulate their own “why” and the importance of service in leadership. Requirements: P1, P2, or P3 standing.

PHAR:8706 Pharmacy Projects arr.
Basic and applied research problems of pharmaceutical interest.

PHAR:8708 Substance Abuse 2 s.h.
Emphasis on the most important themes and concepts in the field of substance use and treatment; drugs of misuse include stimulants, opioids, sedative-hypnotics, alcohol, hallucinogens, marijuana, and performance enhancing compounds; drug use prevention and treatment; depiction of substance use in modern culture.
PHAR:8709 Pharmacist Role in Health Coaching and Nutrition 2 s.h.
Exploration of pharmacist role in health coaching and nutrition.

PHAR:8712 Nonprescription Pharmacotherapy and Self-Care 2 s.h.
Introduction to nonprescription medications; development of patient assessment and consultation skills; understanding of pharmacist's role in patient self-care. Requirements: P3 standing.

PHAR:8717 Ambulatory Care Pharmacy 2 s.h.
Additional experience in the practice of clinical pharmacy; focus on key therapeutic areas where ambulatory care clinical pharmacists currently have a significant impact improving patient care, including anticoagulation management, hyperlipidemia management, and diabetes management; opportunity to develop expertise in clinical decision making, improve problem solving abilities, and continued development in writing and oral presentation skills. Requirements: P3 standing.

PHAR:8718 Special Topics in Acute Care 2 s.h.
Pharmacotherapy for common but varied inpatient medicine topics; review of disorder, therapeutic goals, treatment plans, patient education, monitoring; lecture or case-based classes; anticoagulation, hemostasis, diabetic ketoacidosis, ICU overview, hepatic failure, renal replacement therapies, ACLS, antimicrobial and antifungal selection, septic shock, cardiogenic shock, neurogenic shock and neuro/neurosurgical emergencies, burns, sedation.

PHAR:8721 Leadership and Political Advocacy arr.
Contemporary issues in pharmacy; role of leadership and advocacy in shaping profession; becoming effective advocates within political and policy making process; development of advocacy and leadership skills essential to improve self, profession, and community. Requirements: P1, P2, or P3 standing. Recommendations: PHAR:8702 and PHAR:8722.

PHAR:8722 Current Topics in Health Policy 2 s.h.
Legislative process and broad range of current issues in health policy; general- and pharmacy-specific health policy topics at state and federal levels. Requirements: P1, P2, P3, or graduate standing.

PHAR:8724 Hospital Pharmacy Practice Management Elective 2 s.h.
Organizational structure of pharmacy departments in hospitals and health care systems; models for delivery of pharmaceutical care; pharmacy's role in drug-policy decision making; provision of drug information; clinical and distributive pharmacy services; control of pharmacy and pharmacy costs; use of information technology and automation for service delivery; supervisory management; quality improvement. Requirements: P3 standing.

PHAR:8725 Career Pathways in Pharmacy 1 s.h.
Career preparation through writing, speaking, reading, and listening; writing résumés, curricula vitae, cover letters; interviewing techniques; electronic portfolios; web-based career information; guest speakers from pharmacy associations, major chains; workshop approach. Requirements: P2 or P3 standing.

PHAR:8790 Sustainable Clinical Pharmacy Services: Leadership, Management, and Implementation 2 s.h.
Practical knowledge and understanding of how to implement and sustain clinical pharmacy services in a variety of practice settings; how to identify outcomes to evaluate the success of ongoing services; students explore the perspective of leadership and management as it pertains to clinical pharmacy services.

PHAR:8793 Introduction to Global Health Studies 1 s.h.
Overview of topics pertaining to international health and cultural diversity in relation to pharmacy and global health; preparation for student pharmacists to become health care practitioners who optimize the health of patients and society; inspires students to advance the profession by fostering collaboration, global and public health leadership, professionalism and civic engagement; introduction and discussion of important topics in global health, focusing specifically on care of the underserved in a global context.

PHAR:8794 Emergency Medicine and Toxicology 2 s.h.
Pharmacology in the world of emergency medicine and toxicology; students learn through lecture, case discussion, class participation, and evaluation of evidence-based medicine literature in emergency medicine and toxicology.

PHAR:8795 Foundations of Palliative Care 2 s.h.
Introduction to palliative care as a public health issue; exploration of the principles and practice of palliative care including interdisciplinary care of the whole person and family, communication, and self care.

PHAR:8796 Introduction to Travel Medicine 1 s.h.
Overview of services provided to travelers to prevent and management conditions that may arise prior to, during, and after international travel; students learn about topics pertaining to each of these areas.

PHAR:8797 Ethics and Spirituality in Health Care 3 s.h.
Case-based examination of ethical issues in caring for patients with serious illness; exploration of suffering, spirituality, death, and dying. Requirements: P2 or P3 standing.

PHAR:8798 Continuing Professional Development in Palliative Care 1 s.h.
Self-directed learning and development in palliative care; creation and implementation of a professional development plan including activities in service, scholarship and education, leadership and advocacy, and self-care and personal resilience.

PHAR:8799 Active Residency Preparation 2 s.h.
Students develop the best understanding of what a residency is, what programs exist, the usual qualifications for placement, and the necessary pathway and components of residency attainment; hands-on experience with preparation process; for pharmacy students interested in pursuing residency training following graduation. Requirements: P3 standing.

PHAR:8811 New Drugs for New Therapies: Introduction to Drug Discovery, Development, and Registration 1-2 s.h.
From "magic bullets" to "personalized medicine," the quest for new drugs to treat disease involves serendipity, science, and business success; through lectures, presentations, readings, and discussion, students will learn how potential new drug therapies are identified and what happens between finding a drug that seems to work and the launch of a commercial drug product.
**PHAR:9401 Ambulatory Care Rotation** 6 s.h.
Clinical experience in providing pharmaceutical care in outpatient clinic settings. Requirements: P4 standing.

**PHAR:9402 Elective Ambulatory Care Rotation** 6 s.h.
Clinical experience providing pharmaceutical care in specialty outpatient settings. Requirements: P4 standing.

**PHAR:9403 Elective Nuclear Pharmacy Rotation** 6 s.h.
Practical experience in the handling and clinical use of radiopharmaceuticals. Requirements: P4 standing.

**PHAR:9404 Community Clinical Rotation** 6 s.h.
Clinical experience in the community setting; emphasis on delivery of pharmaceutical care. Requirements: P4 standing.

**PHAR:9405 Elective Hospice and Palliative Care Rotation** 6 s.h.
Clinical experience providing pharmacotherapy for end-of-life care. Requirements: P4 standing.

**PHAR:9406 Elective: Drug Information Rotation** 6 s.h.
Practice experience applying drug information knowledge to service and research projects. Requirements: P4 standing.

**PHAR:9407 Elective Family Medicine Rotation** 6 s.h.
Clinical practice experience applying primary care therapeutics in family medicine practice settings. Requirements: P4 standing.

**PHAR:9408 Elective Hematology/Oncology Rotation** 6 s.h.
Drug therapy management of oncology patients and patients with hematologic malignancies, aplastic anemia, sickle cell disease, hemophilia. Requirements: P4 standing.

**PHAR:9409 Elective Home Health Care Rotation** 6 s.h.
Clinical experience in the team approach to health care delivery, including total parenteral nutrition, chemotherapy, intravenous antibiotics, lab analysis, hospice care, and pain management. Requirements: P4 standing.

**PHAR:9410 Hospital Pharmacy Rotation** 6 s.h.
Instruction and practical experience in various components of hospital pharmacy; emphasis on hospital organization, inpatient and outpatient services, IV admixtures, unit dose, and clinical services. Requirements: P4 standing.

**PHAR:9411 Elective Long Term Care Rotation** 6 s.h.
Practice in consulting and providing services to varied long-term patient care environments. Requirements: P4 standing.

**PHAR:9412 Elective Managed Care Rotation** 6 s.h.
Practice experience in providing pharmaceutical care or pharmacy-related services in a managed care organization. Requirements: P4 standing.

**PHAR:9413 Acute Care Medicine Rotation** 6 s.h.
Clinical experience applying therapeutic skills for the pharmacotherapeutic management of patients on general medicine or specialty inpatient areas. Requirements: P4 standing.

**PHAR:9415 Elective: Pediatrics Rotation** 6 s.h.
Clinical experience in drug therapy management of general and specialty pediatric patients. Requirements: P4 standing.

**PHAR:9416 Elective: Pharmacy Rotation** 6 s.h.
Selected practice experiences in various pharmacy practice settings. Requirements: P4 standing.

**PHAR:9417 Elective Psychiatry Rotation** 6 s.h.
Clinical experience in the rational use of drugs in psychiatric disorders. Requirements: P4 standing.

**PHAR:9418 Elective Research Rotation** 6 s.h.
Practice experience in basic pharmaceutical or clinical research; proposal, study design, data collection and analysis, presentation of results. Requirements: P4 standing.

**PHAR:9419 Elective: Surgery Rotation** 6 s.h.
Clinical experience in drug therapy management on a surgery unit. Requirements: P4 standing.

**PHAR:9420 Elective Pharmacy Practice Underserved Population Rotation** 6 s.h.
Opportunity to learn the best practices for pharmaceutical management; approaches to enhance access to and appropriate use of medicines in underserved and resource-limited environments. Requirements: P4 standing.

**PHAR:9421 Elective Community Management Rotation** 6 s.h.
Practice exposure to community pharmacy operations and management at the store, district, or corporate level. Requirements: P4 standing.

**PHAR:9422 Elective: Compounding/Complementary Alternative Medicine Rotation** 6 s.h.
Clinical work in a community setting with focus on team approach; experience developing extemporaneous compounds to optimize patient care and/or integrating traditional and nontraditional medicine. Requirements: P4 standing.

**PHAR:9423 Elective: Critical Care Medicine Rotation** 6 s.h.
Practice experience providing pharmaceutical services to intensive care unit patients. Requirements: P4 standing.

**PHAR:9424 Elective Emergency Medicine Rotation** 6 s.h.
Clinical experience providing pharmaceutical care for patients treated in the emergency department. Requirements: P4 standing.

**PHAR:9425 Elective Hospital Management Rotation** 6 s.h.
Practice experience in hospital pharmacy operations and management. Requirements: P4 standing.

**PHAR:9426 Elective Infectious Disease Rotation** 6 s.h.
Clinical experience providing pharmacotherapeutic management of patients receiving antimicrobial medications. Requirements: P4 standing.

**PHAR:9427 Elective Medication Use Evaluation Rotation** 6 s.h.
Practical experience in drug use evaluation to improve patient outcomes. Requirements: P4 standing.

**PHAR:9428 Elective Pharmacy Industry Rotation** 6 s.h.
Practice experience in an area of the pharmaceutical or related industries. Requirements: P4 standing.

**PHAR:9429 Elective: Pharmacy Regulatory Rotation** 6 s.h.
Practice experience with a pharmacy regulatory body. Requirements: P4 standing.

**PHAR:9430 Elective: Professional Association Rotation** 6 s.h.
Practice experience in professional association management environment at the state or national level. Requirements: P4 standing.

**PHAR:9431 Elective: Veterinary Pharmacy Rotation** 6 s.h.
Practice experience in managing drug therapy for animals. Requirements: P4 standing.
PHAR:9432 Elective Community Rotation 6 s.h.
Community pharmacy experience emphasizing patient-centered care. Requirements: P4 standing.

PHAR:9433 Elective Academic Rotation 6 s.h.
Practice experience delivering pharmacy education with a College of Pharmacy faculty member. Requirements: P4 standing.

PHAR:9434 Elective International Pharmacy Non-Patient Care Rotation 6 s.h.
Practice experiences in pharmacy practice outside the United States with a focus on research, health care policy, and/or pharmacy education. Requirements: P4 standing.

PHAR:9435 Administrative Bye Rotation 6 s.h.

PHAR:9436 Elective Transitions of Care Rotation 6 s.h.
Practice experience consulting and providing services to patients transitioning through different patient care environments.

PHAR:9437 Elective Informatics Rotation 6 s.h.
Practice experience in informatics in health care setting.

PHAR:9438 Elective International Pharmacy Patient Care Rotation 6 s.h.
Practice experiences in pharmacy practice outside the United States with a patient care focus.

PHAR:9440 Elective Virtual Rotation 6 s.h.
Experience with disease state management and board preparation; students examine medical literature to answer drug information questions, reflect on current issues facing the medical community, and identify potential solutions to problems for individual patients and populations; activities are intended to guide students toward professional competency. Requirements: P4 standing.

PHAR:9441 Elective Neurology Rotation 6 s.h.
Clinical experience in pharmacotherapeutic and pathophysiologic considerations of neurological disorders. Requirements: P4 standing.