PHARMACEUTICAL SCIENCES

Office: 3610 EACPHS; 313-577-1747
Chairperson: George B. Corcoran
http://cphs.wayne.edu/sciences/index.php

The Eugene Applebaum College of Pharmacy and Health Sciences has established a combined undergraduate and graduate program. Qualified senior students may enroll simultaneously in the undergraduate Bachelor of Health Science with a concentration in pharmaceutical sciences degree program and the graduate Doctor of Pharmacy (Pharm.D.) degree program and apply a maximum of thirty credits toward both the undergraduate and graduate degree.

Those who are enrolled in this program may expect to complete the B.H.S. pharmaceutical sciences concentration and the Pharm.D. degrees in seven years of full-time study.

NOTE: The B.H.S. pharmaceutical sciences concentration does not qualify the holder for licensure as a pharmacist. The Pharm.D. degree is required to qualify the holder for licensure as a pharmacist.

ABRAMSON, HANLEY N.: Ph.D., M.S., University of Michigan; B.S., Wayne State University; Professor
BARR, MARTIN: Ph.D., Ohio State University; M.S., Philadelphia College of Pharmacy and Science; B.S., Temple University; Professor Emeritus
BHALLA, DEEPAK: Ph.D., Howard University; M.S., B.S., Punjab University; Professor
CHEN, FEI: M.D., Natong Medical College; Ph.D., Beijing Medical University; Professor
COMMISSARIS, RANDALL L.: Ph.D., Michigan State University; B.S., Alma College; Associate Professor
CORCORAN, GEORGE B.: Ph.D., George Washington University; M.S., Bucknell University; B.A., Ithaca College; Professor and Chair
DUTTA, ALOKE K.: Ph.D., Ohio University; M.S., B.S., Calcutta University; Professor
FIRESTINE, STEVEN M.: Ph.D., Purdue University; B.S., University of Michigan; Professor
KOWLURU, ANJANEYULU: Ph.D., Indian Institute of Technology; M.S., Allahabad University; B.S., Andhra Loyola College; Professor
LAU, SERRINE: Ph.D, University of Michigan; B.S., University of Houston; Professor
MERKEL, OLIVIA M: Ph.D., M.S., Philipps-Universität Marburg; Assistant Professor
MONKS, TERRENCE J.: Ph.D., St. Mary's Hospital Medical School, University of London; B.Sc., Hatfield Polytechnic; Professor
MOSZCZYNSKA, ANNA B.: Ph.D., M.Sc., University of Toronto; M.S., B.Sc., Technical University; Associate Professor
NAGWEKAR, JANARDAN B.: Ph.D., Temple University; M.S. Philadelphia College of Pharmacy and Science; B.S., Bombay University; B.S., Baroda University; Professor Emeritus
PITTS, DAVID K.: Ph.D., M.S., Wayne State University; B.S., Michigan State University; Associate Professor
QIN, ZHIHUI: Ph.D., B.S., Peking University; Assistant Professor
REINEKE, JOSHUA J.: Ph.D., B.S., Brown University; Assistant Professor
SEPAROVIC, DUSKA M: Ph.D., Kent State University; M.S., B.S., University of Zagreb; Associate Professor
STEMMER, PAUL M.: Ph.D., Michigan State University; B.S., University of Cincinnati; Associate Professor (Research)
STEMMLER, TIMOTHY L.: Ph.D, University of Michigan; M.S., B.A., St. Louis University; Professor
WANG, JIEMEI: M.D., Ph.D., Sun Yat-Sen University; Assistant Professor
YI, ZHENPING: Ph.D., M.S., B.S., Nanjing University; Professor

Pharmaceutical Sciences

PSC 3110 Pharmaceutical Biochemistry Cr. 3
Survey of biochemistry for pharmacy students, metabolism, and drug effects in the maintenance of normal human biochemistry and homeostasis. Offered Fall.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PSC 4115 Pharmaceutics I Cr. 3
Introduction to pure drug substance formulation into dosage forms and the principles and mechanisms for developing dosage forms for safe and effective use in patients. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PSC 4125 Introduction to Pharmaceutical Sciences: Medicinal Chemistry / Pharmacology / Immunology Cr. 3
Introduction to medicinal chemistry, pharmacology and biotechnology with a focus on drug discovery and drug action. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PSC 4215 Pharmaceutics II Cr. 2
Basic pharmacokinetics: principles of drug administration, distribution, metabolism and excretion (ADME) using different dosage forms, and basics of administration routes. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PSC 4225 Autonomic Pharmacology Cr. 2
The principles of autonomic pharmacology integrated into an understanding of the functioning of the autonomic system; the major target organs and the physiological effects of agonists and antagonists elicited through autonomic receptor subtypes. Offered Winter.
Prerequisite: PSC 4125
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
PSC 5115 Pharmacokinetics Cr. 2
Conceptual knowledge-base and practical calculation applications of pharmacokinetic principles. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PSC 5600 Drugs of Abuse Cr. 2
Pharmacology and toxicology, both clinical and animal, associated with recreationally-used agents; treatment of acute and chronic problems associated with these agents; concept of chronic drug administration and abuse as disease state. Offered Yearly.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

PSC 5870 Seminar in Pharmacology Cr. 1
Reports and discussions on current literature and recent advances in the field. Assigned topics presented by students. Offered for undergraduate credit only. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Repeatable for 2 Credits

PSC 5990 Directed Study in Medicinal Chemistry Cr. 2
Offered for undergraduate credit only. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

PSC 5991 Directed Study in Pharmaceutics Cr. 2
Offered for undergraduate credit only. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

PSC 5992 Directed Study in Pharmacology Cr. 2
Offered for undergraduate credit only. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

PSC 6285 Pharmacy Seminar Cr. 1
Presentations on topics of current interest on basic science problems relevant to the major discipline of pharmaceutical sciences. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PSC 7840

PSC 6800 Introduction to Research Cr. 2
Fundamental concepts and resources for responsible conduct of biomedical research and advancing scientific professional development, and data analysis and statistics. Offered Yearly.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

PSC 6890 Toxicology and Adverse Drug Reactions Cr. 3
Study of toxicology and adverse drug reactions including metabolism, hypersensitivity, carcinogenicity, drug-drug interactions, and other factors hazardous to human health. Offered Yearly.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

PSC 6910 Pharmaceutical Waste: Environmental Impact and Management Cr. 2-3
Course designed for advanced professional and graduate students with sufficient chemistry and/or biological sciences background who are interested in the environmental impact, management, and regulation of waste pharmaceuticals as emerging issues. Offered Spring/Summer.
Restriction(s): Enrollment is limited to Professional level students.
Equivalent: CE 6910

Pharmacy

PHA 3030 Pharmacy Calculations and Descriptive Biostatistics Cr. 1
Basics of pharmacy weights and measures; conversions between English, metric, and avoirdupois systems. Basic concepts in biostatistics: means, medians, modes. Offered Fall.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 4105 Pathophysiology I Cr. 3
Advanced pathophysiologic concepts affecting the adult human using a research-based, system-focused approach, including etiology, pathogenesis and clinical manifestations of commonly found/seen altered health states. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PHA 4125 Drug Literature Evaluation and Foundations of Research Cr. 3
Critical evaluation of the medical literature and provision of foundational research skills. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PHA 4205 Pathophysiology II Cr. 2
Advanced pathophysiologic concepts affecting the adult human using a research-based, system-focused approach, including etiology, pathogenesis and clinical manifestations of commonly found/seen altered health states. Offered Winter.
Prerequisite: PHA 4105
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PHA 4210 Principles of Pharmacotherapy III Cr. 4-5
Pharmacotherapeutic principles in infectious diseases and respiratory diseases. Offered Winter.
Prerequisites: (May be taken concurrently: [PHA 4215 with a minimum grade of C])
Corequisite: PHA 4215
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 4225 Principles of Pharmacotherapy I: Respiratory, Gastroenterology, Allergy, Ophthalmology Cr. 4
Principles of medicinal chemistry, pharmacology, and therapeutics as applied to the treatment of gastroenterologic, pulmonary, ophthalmologic, and allergic disorders, and basic self-care. Offered Winter.
Prerequisite: PHA 4105
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

Course Material Fees: $70

PHA 4235 Pharmacotherapeutic Problem Solving I: Respiratory, Gastroenterology, Allergy, Ophthalmology Cr. 2
Problem-based learning focusing on pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics of respiratory, gastroenterologic, allergic, and ophthalmologic disorders, and basic self-care. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

Course Material Fees: $75
PHA 4260 Principles of Pharmacotherapy IV Cr. 4-5
Pharmacotherapeutic principles of cardiovascular diseases. Offered Fall.
Prerequisites: (PHA 4010 with a minimum grade of C) AND (PHA 4110 with a minimum grade of C) AND (PSC 4320 with a minimum grade of C).
Corequisite: PHA 4215
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 4395 Research Scholars: Research Development Cr. 2
Development of basic foundations for research practices for students pursuing the Research Scholars path. Offered Spring/Summer.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PHA 5110 Pharmacogenomics Cr. 2
Principles and applications of human genetics and genomics in drug therapy optimization, patient care, and counseling. Offered Spring/Summer.
Restriction(s): Enrollment limited to students with a class of PharmD Yr 2 or PharmD Yr 3; enrollment is limited to Professional level students.

PHA 5115 Principles of Pharmacotherapy II: Cardiology, Nephrology Cr. 5
Principles of medicinal chemistry, pharmacology, and therapeutics as applied to the treatment of cardiovascular and renal disease. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PHA 5155

PHA 5125 Principles of Pharmacotherapy III: Endocrinology, Gynecology, Urology Cr. 4
Principles of medicinal chemistry, pharmacology, and therapeutics as applied to the treatment of endocrinologic, gynecologic, and urologic disorders. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PHA 5165

PHA 5135 Pharmacotherapeutic Problem Solving II: Nephrology, Cardiology, Endocrinology, Gynecology, Urology Cr. 2
Problem-based learning focusing on pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics of nephrologic, cardiologic, endocrinologic, and gynecologic conditions.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PHA 5155 Principles of Pharmacotherapy V Cr. 4-5
Pharmacotherapeutic principles in neurology, psychiatry, and drug abuse. Offered Fall.
Corequisite: PHA 5125
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 5165 Principles of Pharmacotherapy VI Cr. 4-5
Pharmacotherapeutic principles of endocrine, renal, and gastrointestinal diseases. Offered Fall.
Corequisite: PHA 5175
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 5175 Pharmacotherapeutic Problem Solving III Cr. 2
Third in a four-semester sequence focusing on the learning of pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics within the context of patient-based problems. Offered Fall.
Corequisite: PHA 5155, PHA 5165
Restriction(s): Enrollment is limited to Graduate or Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 5175 Pharmacotherapeutic Problem Solving III Cr. 2
Third in a four-semester sequence focusing on the learning of pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics within the context of patient-based problems. Offered Fall.
Corequisite: PHA 5155, PHA 5165
Restriction(s): Enrollment is limited to Graduate or Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 5195 Research Scholars: Research Conduct Elective Cr. 1-4
Conducting research project for students pursuing the Research Scholars path. Offered Every Term.
Prerequisites: (PHA 4395)
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Repeatable for 4 Credits

PHA 5215 Principles of Pharmacotherapy IV: Infectious Diseases Cr. 4
The chemistry, pharmacology, and toxicology of anti-infective agents and the pathophysiology, microbiology, and therapeutics of infectious diseases. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PHA 4210

PHA 5225 Principles of Pharmacotherapy V: Neurology, Psychiatry Cr. 4
Medicinal chemistry, pharmacology and therapeutics of neurologic and psychiatric disorders. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PHA 5155

PHA 5235 Pharmacotherapeutic Problem Solving III: Infectious Diseases, Neurology, Psychiatry Cr. 2
Problem-based learning focusing on pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics of infectious, neurologic, and psychiatric diseases. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Course Material Fees: $75
Equivalent: PHA 5175

PHA 5270 Principles of Pharmacotherapy VII Cr. 4-5
Pharmacotherapeutic principles in oncology, toxicology, dermatology, and drug-induced diseases. Offered Winter.
Corequisite: PHA 5227
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 5275 Pharmacotherapeutic Problem Solving IV Cr. 2
Fourth in a four-semester sequence focusing on the learning of pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics within the context of patient-based problems. Offered Winter.
Corequisite: PHA 5270, PHA 5280
Restriction(s): Enrollment is limited to Graduate or Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PHA 5280 Principles of Pharmacotherapy VIII Cr. 2-3
Pharmacotherapeutic principles of special populations, men’s and women’s health, patient problem solving. Offered Winter.
Corequisite: PHA 5275
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.
PHARMACEUTICAL SCIENCES

**Course Material Fees:** enrollment limited to students in the Pharmacy and Health Sciences.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

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**Equivalent:** PHA 5270

**PPR 6135 Pharmacotherapeutic Problem Solving IV: Oncology and Advanced Pharmacotherapeutics Cr. 3**

Problem-based learning focusing on pathophysiology, pharmacology, medicinal chemistry and pharmacotherapeutics of neoplastic disorders and advanced pharmacotherapeutics. Offered Fall.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**Equivalent:** PHA 5275

**PPR 6235 Pharmacotherapeutic Problem Solving V: Drug Induced Diseases Cr. 2**

Problem-based learning focusing on pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapeutics of drug-induced diseases. Offered Winter.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

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**Pharmacy Practice**

**PPR 4115 Social Administrative Sciences and Professional Development I Cr. 2**

Designed to familiarize the student with pharmacy as a profession and to facilitate an understanding of its place in health care today and in the future. Offered Fall.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**PPR 4120 Patient Care Laboratory III Cr. 1**

Early patient care experiences in pharmacy practice. Offered Fall.

**Restriction(s):** Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

**Course Material Fees:** $25

**PPR 4190 Health Care I: Delivery and Finance Cr. 3**

Management, delivery and financial aspects of pharmacy services within the context of the health care delivery system. Offered Fall.

**Restriction(s):** Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

**PPR 4220 Patient Care Laboratory IV Cr. 1**

Early patient care experiences in pharmacy practice. Offered Fall.

**Restriction(s):** Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

**Course Material Fees:** $15

**PPR 4230 Introductory Pharmacy Practice Experience III Cr. 1**

Continuation of PPR 4130. Offered Yearly.

**Restriction(s):** Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

**Course Material Fees:** $75

**PPR 4245 Patient Care Lab 1 Cr. 1**

The Patient Care Lab sequence (PCL 1-4) is designed to allow students to begin to develop the direct patient care and pharmacy practice skills they will need to become successful practitioners. Offered Winter.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**Course Material Fees:** $35

**PPR 4255 Social Administrative Sciences and Professional Development II Cr. 2**

Exploration of health care delivery and payment systems, with an emphasis on pharmacy and pharmacists. Discussion of social constructs, cultural sensitivity, and health belief models as related to pharmacy practice. Offered Winter.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**PPR 4290 Health Care II: Professional Practice and Development Cr. 2**

Student professionalism in pharmacy practice. Knowledge, skill sets, and professional demeanor necessary to conduct and develop pharmacy practice within health systems. Offered Winter.

**Restriction(s):** Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

**PPR 4315 Pharmacy Jurisprudence Cr. 2**

Application of Michigan state and federal laws to the practice of pharmacy. Offered Spring/Summer.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**PPR 4365 (WI) Introductory Pharmacy Practice Experience I Cr. 1**

Beginning learning experiences for patient interviewing and counseling. Exploration of health care delivery and payment systems, with an emphasis on pharmacy and pharmacists. Discussion of social constructs, cultural sensitivity, and health belief models as related to pharmacy practice. Offered Winter.

**PPR 5135 Hospital Introduction to Pharmacy Practice (H-IPPE) Cr. 2**

Application of Michigan state and federal laws to the practice of pharmacy. Offered Spring/Summer.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**PPR 5145 Patient Care Lab II Cr. 1**

The Patient Care Lab sequence (PCL 1-4) is designed to allow students to begin to develop the direct patient care and pharmacy practice skills they will need to become successful practitioners. Offered Winter.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**Course Material Fees:** $35

**PPR 5155 Social Administrative Sciences and Professional Development III: Practice Management Cr. 2**

Focus on topics that will enable an understanding of how pharmacy services are managed and how to manage personnel and provide leadership. Offered Fall.

**Restriction(s):** Enrollment limited to students in the Doctor of Pharmacy program.

**Equivalent:** PPR 4190
PPR 5165 Introductory Pharmacy Practice Experience II Cr. 1
Beginning learning experiences for patient interviewing and counseling, interaction with healthcare professionals, pharmacy practice in various settings, interprofessional education, healthcare in the underserved population, and community service. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PPR 5215 Applied Pharmacokinetics and Pharmacogenomics Cr. 2
Application of knowledge of pharmacokinetics and pharmacogenomics to patient-specific drug dosing. Offered Winter.
Prerequisites: PSC 5115
Restriction(s): Enrollment limited to the Doctor of Pharmacy program.
Equivalent: PPR 7670

PPR 5235 Community Introduction to Pharmacy Practice Experience (C-IPPE) Cr. 2
Offered Yearly.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 5245 Patient Care Lab III Cr. 1
The Patient Care Lab sequence (PCL 1-4) is designed to allow students to begin to develop the direct patient care and pharmacy practice skills they will need to become successful practitioners. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

Course Material Fees: $35
Equivalent: PPR 4120

PPR 5255 Social Administrative Sciences and Professional Development IV Cr. 2
Designed to enable understanding of the importance of constructing medication systems and processes around proven best practices to maximize patient safety and to begin developing the ability to conceptualize, implement, and manage these systems in all health care settings. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PPR 5265 Introductory Pharmacy Practice Experience III Cr. 1
The introductory pharmacy practice experiences are to provide a beginning learning experiences for patient interviewing and counseling, interaction with healthcare professionals, pharmacy practice in various settings, interprofessional education, healthcare in the underserved population, and community service. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Course Material Fees: $75
Equivalent: PPR 4230

PPR 5990 Directed Study in Pharmacy Practice Cr. 2
No credit after election of two credits in any of PSC 5990, PSC 5991, PSC 5992, except by written consent of department chair. Offered Every Term.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6115 Applied Therapeutics in Self-Care Cr. 2
Application of concepts of patient assessment, therapeutics, patient education, and health care systems to patient self-care. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PPR 6145 Patient Care Lab IV Cr. 1
The Patient Care Lab sequence (PCL 1-4) is designed to allow students to begin to develop the direct patient care and pharmacy practice skills they will need to become successful practitioners. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PPR 4220

PPR 6155 Social Administrative Sciences and Professional Development V Cr. 3
Development of and justification for a pharmacy service, including background, service objectives, service design, implementation plan, and evaluation. Offered Fall.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PPR 4290

PPR 6165 Community-Introductory Pharmacy Practice Experience (C-IPPE) Cr. 2
Introduction to the organization and provision of community pharmacy services. Offered Fall, Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PPR 5235

PPR 6175 Hospital-Introductory Pharmacy Practice Experience (H-IPPE) Cr. 2
Introduction to the organization and provision of health-system pharmacy services. Offered Fall, Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PPR 5135

PPR 6180 (WI) Advanced Ethics and Professional Responsibility Cr. 2
Advanced concepts in health care provision. Students required to submit a written paper, manuscript length and style, on an ethics in pharmacy project conducted as a course requirement. Satisfies the Writing Intensive requirement for Pharm.D. students. Offered Fall.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6235 Social Administrative Sciences and Professional Development V Cr. 2
Understanding, developing and evaluating population health and population-based health care programs. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
 Equivalent: PPR 6290

PPR 6245 Pharmacy Ethics and Professional Responsibility Cr. 2
Understanding ethical precepts and applying normative principles to the practice of pharmacy in the context of professional service to the community. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.
Equivalent: PPR 6180

PPR 6290 Population-Based Medication Management Cr. 2
Evaluation of medication use within selected populations. Discussions include therapeutic, humanistic, and economic outcomes and drug utilization review. Offered Yearly.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy or Master in Public Health programs; enrollment limited to students in the Pharmacy and Health Sciences.
PPR 6295 Clinical Capstone Cr. 2
Utilization of pharmacotherapeutic-related knowledge and skills to evaluate patient cases and practice-related problems in order to assess students’ preparedness for advanced pharmacy practice experiences. Offered Winter.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PPR 6300 Patient Perspectives of Health, Illness and Culture Cr. 2
People from various cultures (religious, ethnic, sexual orientation, disability, chronic illness, economic status) discuss in small groups how these cultures influence living with a chronic illness. Students also discuss readings on health culture and keep a journal on their course experience. Offered Spring/Summer.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6320 Underserved Care: Local and Global Experiences Cr. 2
Provides the opportunity for hands-on clinical experience in local and international under-served communities. Offered Every Term.
Restriction(s): Enrollment limited to students in the Doctor of Pharmacy program.

PPR 6520 Contemporary Issues in Nutrition Support Cr. 2
Provision of patient care in cooperation with patients, patients’ agents, prescribers, and other members of an interprofessional health care team; management and use of resources of the health care system; evaluation of a patient case and design of an optimal nutritional regimen. Offered Spring/Summer.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6550 Psychiatric Pharmacy Cr. 2
Covers core clinical sciences beyond the required pharmacotherapy modules on psychiatric topics. Offered Spring/Summer.
Prerequisite: PHA 5155 or PHA 5225

PPR 6580 Contemporary Issues in Anticoagulation Management Cr. 2
Advanced therapeutics in area of anticoagulant use. Offered Fall.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6590 Principles of Pain Management Cr. 2
Covers core clinical sciences beyond the required pharmacotherapy modules on pain management topics. And expands on the pathophysiology, pharmacology, and therapeutics covered in the core clinical sciences courses to assist the student pharmacist in developing assessment skills emphasizing inter-professional collaboration. Offered Winter.
Prerequisites: ([PPR 5225])
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6720 Clinical Applications of Diabetes Cr. 2
Advanced elective course on management of diabetes mellitus and its related disorders. Principles of student directed learning, literature discussion and evaluation, interprofessional exposure, small group learning, and hands-on activities. Offered Fall.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6770 Study of Medicinal Plants and Culture in Amazonia Cr. 2
Ethnobotany of indigenous plants and use of these substances in the health and beliefs of the native people. Students meet with botanists, taxonomists, pharmacists, shamans, and native people. Offered Spring/Summer.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.

PPR 6860 Principles of Pediatric Pharmacy Cr. 2-3
Common pediatric problems and diseases including poisonings, cystic fibrosis, sickle-cell anemia, placental transfer of drugs and teratology. Offered Yearly.
Restriction(s): Enrollment is limited to Professional level students; enrollment limited to students in the Pharmacy and Health Sciences.