

Pharmacy Practice (PHRM)

PHRM 170. Common Diseases, Prevention, and Treatment. 2 Credits.

Consumer-oriented introduction to common diseases, their prevention and treatment including common classes of drugs, non-drug treatment, and safe medication use.

PHRM 189. Skills for Academic Success. 1 Credit.

This course is designed to ease the transition for new students at NDSU. Students will be introduced to campus and learn skills and techniques used by successful college students.

PHRM 190. Critical Thinking, Academic, and Professional Skills for the Health Professions. 3 Credits.

This course provides students with opportunities to develop proficient critical thinking and clinical problem-solving skills as they are used in the health professions. This course will also immerse students in reasoning-related activities that facilitate academic success, teamwork, and a demonstrated commitment to the roles and responsibilities required of all health professionals. Cross-listed with ASCI 190 and PH 190.

PHRM 194. Individual Study. 1-5 Credits.**PHRM 196. Field Experience. 1-15 Credits.****PHRM 199. Special Topics. 1-5 Credits.****PHRM 291. Seminar. 1-3 Credits.****PHRM 292. Global Practicum: Study Abroad. 1-15 Credits.**

Pre-Arranged study at accredited foreign institutions (study abroad), domestic institutions (National Student Exchange) or on approved study abroad programs. Pre-requisite: Sophomore standing and prior approval by International Student and Study Abroad Services and major department. Graded 'P' or 'F' (Undergraduate), or 'S' or 'U' (Graduate).

PHRM 294. Individual Study. 1-5 Credits.**PHRM 299. Special Topics. 1-5 Credits.****PHRM 301. Top Drugs I. 1 Credit.**

Introduction to basic knowledge necessary for success in the professional pharmacy curriculum and in the practice of pharmacy. Student will learn brand/generic/indication for all medications on the Top Drug Medication List. Prereq: acceptance into the PharmD program.

PHRM 324. Writing and Professionalization in Pharmacy. 3 Credits.

Study of and practice in language use and written conventions of pharmacy practice and the pharmaceutical sciences. Students practice writing for career development, documenting patient care, evaluating and synthesizing scientific literature, and communicating with patient and professional audiences. Prereq: ENGL 120, junior status, admission to the early admission pathway to the Doctor of Pharmacy program.

PHRM 330. Introduction to Ambulatory Care Pharmacy. 2 Credits.

Pharmacists practicing in ambulatory care take on a variety of responsibilities in varied settings and are central to communities with high levels of interaction with patients of diverse backgrounds and cultures. Ambulatory care pharmacy practice is expanding throughout the country. This elective course provides an introduction to ambulatory care pharmacy. Multiple practice sites and opportunities will be highlighted. Students will learn and apply concepts to propose their own ambulatory care pharmacy practice. Prereq: Requires admission into the PharmD program.

PHRM 340. Patient Assessment and Pathophysiology I. 4 Credits.

Introduction to interviewing skills and physical assessment techniques important for assessing patients and monitoring disease states and drug therapy. Comprehensive study of the normal and abnormal physiological processes and the mechanisms of disease important to the understanding of pharmacology and drug therapy. Prereq: Admission to the Pharmacy program.

PHRM 341. Pathophysiology II. 3 Credits.

Normal and abnormal physiological processes and the mechanisms important to the understanding of pharmacology and drug therapy. Prereq: Admission to the PharmD program.

PHRM 350. Introduction to Pharmacy Practice. 2 Credits.

Issues related to pharmacy practice, patient medication counseling, retrieval of drug information, cultural competency, health literacy, pharmaceutical care plans, and evaluating adverse drug reactions/interactions are discussed. Prereq: Admission to the Pharmacy Program.

PHRM 351L. Pharmacy Practice Laboratory I. 2 Credits.

This course is a hands-on skills laboratory in contemporary pharmacy practice. Learners will engage in activities and simulations which provide opportunities for application of skills relevant to community pharmacy practice. Prereq: Admission to the PharmD program.

PHRM 352. Introduction to Health Care Systems. 2 Credits.

Pharmacy students will be introduced to health professions, health care delivery systems, financing, access, quality, and economic issues. Prereq: Admission to the PharmD program.

PHRM 353. Introduction to Pharmacy and the Health Care System. 3 Credits.

Introduction to the knowledge, skills and attitudes necessary for success in the professional pharmacy curriculum and in the practice of pharmacy. Pharmacy students will be introduced to health professions, health care delivery systems, financing, access, quality, and economic issues. Prereq: admission to the PharmD program.

PHRM 355. Institutional Introductory Pharmacy Practice Experience. 3 Credits.

This course is designed to be an introduction to institution based pharmacy practice. This course consists of a 3 week, 120 hour, unpaid, supervised pharmacy practice experience in an institutional pharmacy setting, required assignments, and required reflection. Pass/Fail grading. Prereq: PHRM 400, PHRM 450, PHRM 452L, PHRM 455, PHRM 532, PHRM 534, PHRM 535, PHRM 538, PHRM 565, PSCI 413, PSCI 414, PSCI 415, PSCI 417 and CHP 400.

PHRM 360. Introduction to Drug Literature. 1 Credit.

Survey of clinical drug literature sources (primary, secondary, and tertiary) and introduction to evaluation of the original literature. Prereq: Admission to the PharmD Program.

PHRM 379. Global Seminar. 1-6 Credits.

NDSU instructed experience or field study in a foreign country. Conducted in English for residence credit. Pre-requisite: Prior approval by International Student and Study Abroad Services and major department. May be repeated. Standard Grading.

PHRM 391. Seminar. 1-3 Credits.**PHRM 392. Global Practicum: Study Abroad. 1-15 Credits.**

Pre-Arranged study at accredited foreign institutions (study abroad), domestic institutions (National Student Exchange) or on approved study abroad programs. Pre-requisite: Sophomore standing and prior approval by International Student and Study Abroad Services and major department. Graded 'P' or 'F' (Undergraduate), or 'S' or 'U' (Graduate).

PHRM 394. Individual Study. 1-5 Credits.**PHRM 397. Fe/Coop Ed/Internship. 1-4 Credits.****PHRM 399. Special Topics. 1-5 Credits.****PHRM 400. Top Drugs II. 1 Credit.**

Introduction to basic knowledge necessary for success in the professional pharmacy curriculum and in the practice of pharmacy. Prereq: PHRM 301 with a grade of C or higher.

PHRM 425. Instructional Design for Health Professionals. 2 Credits.

Build basic skills to design and implement effective instructional activities ranging from pharmacy-specific professional education (e.g. patient education, inter-professional medication-related presentations) to college-level instructional tasks. Prereq: PHRM 353 with a grade of C or higher. {Also offered for graduate credit - see PHRM 625.}

PHRM 450. Self Care. 3 Credits.

Course designed to provide pharmacy students with the knowledge, skills, and practical tools necessary to provide self care recommendations to patients, physicians, nurses, and other allied health care professionals. Prereq: PHRM 340, PHRM 341 both with a grade of C or higher.

PHRM 452L. Pharmacy Practice Laboratory II. 2 Credits.

This course will afford the learner the knowledge, skill set, and resources needed to practice in an institutional setting. Contextualized, competency-based, learning activities are used to promote analytical reasoning and mastery of learning outcomes. Topics include health-system pharmacy; sterile and nonsterile products; compounding; therapeutic plan formulation using electronic health records; point-of-care testing. Prereq: PHRM 351L with a grade of C or higher.

PHRM 453. Complementary and Alternative Therapies: An Evidence-Based Approach. 2 Credits.

This course is designed to provide health professions students with an overview of each form of complementary and alternative medicine (CAM) commonly practiced in the United States. Students will develop knowledge, skills, and practical tools necessary to understand and evaluate CAM, and provide recommendations for appropriate use to patients or other health care professionals. While specific products will be discussed when appropriate, the emphasis is on broad systems of treatment. Prereq: PHRM 360 or NURS 301 each with a grade of C or better. Dual-listing: PHRM 653.

PHRM 454. Scientific Writing for Health Professionals. 2 Credits.

Explores skills and concepts for communicating with scientific, patient, and public audiences with an emphasis on audience and context analysis. Students will choose projects that advance their professional goals. Prereq: PHRM 360 or PHRM 480 with a grade of C or higher. Dual-listing: PHRM 654.

PHRM 455. Community Introductory Pharmacy Practice Experience. 4 Credits.

This course is designed to be an introduction to community based pharmacy practice. This course consists of a 4 week, 160 hour, unpaid, supervised pharmacy practice experience in a community pharmacy setting, required assignments, and required reflection. Pass/Fail grading. Prereq: PHRM 301, PHRM 340, PHRM 341, PHRM 351L, PHRM 353, PHRM 480, PSCI 367, PSCI 368, PSCI 369, PSCI 410, PSCI 411, PSCI 412, PSCI 470 and MICR 470.

PHRM 475. Pharmacy Practice Management. 3 Credits.

This course introduces students to management techniques applicable to the contemporary practice of pharmacy in community and institutional settings. Prereq: PHRM 350, PHRM 352, PHRM 452L.

PHRM 479. Global Seminar. 1-6 Credits.

NDSU instructed experience or field study in a foreign country. Conducted in English for residence credit. Pre-requisite: Prior approval by International Student and Study Abroad Services and major department. May be repeated. Standard Grading.

PHRM 480. Evidence Based Medicine. 2 Credits.

Evaluation of original literature in which drug information is found to achieve a thorough understanding of the structure of the literature and its inherent strengths and weaknesses. Prereq: PHRM 360 with a grade of C or higher.

PHRM 491. Seminar. 1-5 Credits.**PHRM 492. Study Abroad. 1-15 Credits.****PHRM 494. Individual Study. 1-5 Credits.****PHRM 499. Special Topics. 1-5 Credits.****PHRM 500. Top Drugs III. 1 Credit.**

Students will build on drug knowledge they have obtained from PHRM 400 to be successful in the practice of pharmacy. Prereq: PHRM 400 with a grade of C or higher.

PHRM 520. Special Populations. 3 Credits.

Focused on providing pharmaceutical care for a variety of populations including men, women, pediatric and geriatric patients. Prereq: PHRM 532, PHRM 537 and PHRM 538, all with a grade of C or better. {Also available for graduate credit - See PHRM 620.}.

PHRM 532. Infectious Disease. 3 Credits.

This course is a clinical, patient-oriented approach to infectious disease. The instructors will review antimicrobial agents combined with specific infectious disease processes and therapies to help the students make appropriate judgments on infectious disease problems. Prereq: MICR 470, PSCI 412. {Also offered for graduate credit - see PHRM 632.}.

PHRM 534. Rheumatology/Endocrinology/Gastrointestinal. 3 Credits.

Pharmacotherapy of disorders involving the musculoskeletal, endocrine, and gastrointestinal systems. Prereq: PSCI 413 with a grade of C or higher.

PHRM 535. Hematology and Oncology. 3 Credits.

This course provides a framework for understanding the role molecular biology plays in the pathophysiology and treatment of the most prevalent oncologic and hematologic malignancies, as well as benign and drug-induced hematologic conditions. Students will apply evidence-based principles in assessing/monitoring appropriate therapy for these patients. Prereq: PSCI 412 with a grade of C or higher.

PHRM 536. Neurology & Psychiatry Pharmacotherapy. 3 Credits.

The course will focus on the principles, selection and management of pharmacotherapy for the major psychiatric and neurologic diseases. Learning methods will include face-to-face lecture, in-class discussion, small group activities, and case formulations. Prereq: PSCI 415. {Also offered for graduate credit - see PHRM 636.}.

PHRM 537. Renal Disease/Fluid and Electrolytes. 2 Credits.

This course focuses on pathophysiology and pharmacotherapy of major renal diseases including fluid and electrolyte disorders, acid/base balance, and renal replacement therapy. Emphasis is placed upon application of knowledge to patient care situations and the mastery of pharmacotherapy. Prereq: PSCI 414 with a grade of C or higher.

PHRM 538. Cardiovascular and Pulmonary Diseases. 4 Credits.

Pharmacotherapy of cardiovascular and pulmonary diseases. Study of the pathophysiology, clinical presentation, and treatment of various cardiovascular and pulmonary diseases. Prereq: PSCI 413 and PSCI 414 with a grade of C or higher.

PHRM 540. Public Health for Pharmacists. 3 Credits.

Pharmacy students will be introduced to public health services, health disparities, emergency preparedness, epidemiology, behavioral health, health promotion, and global health. Prereq: PHRM 353 and PHRM 480 both with a grade of C or higher. {Also offered for graduate credit - see PHRM 640.}.

PHRM 545L. Pharmacotherapy Laboratory. 1 Credit.

This is a problem-based and skills-based laboratory integrating the pathophysiology, pharmacology, and therapeutic aspects of various diseases in order to prepare learners to make sound patient-centered therapeutic decisions and provide clinical rationale during the pharmacist's patient care process. The class activities are designed as a team-based approach. Prereq: PHRM 450, PHRM 532, PHRM 534, PHRM 538 completed with a grade of C or higher. Co-req: PHRM 536, PHRM 537.

PHRM 546. Advanced Topics in Neuropsychiatry: Major Neurocognitive Disorders. 2 Credits.

The course will provide the most up-to-date information regarding advanced care and management of patients with select major neurocognitive disorders, previously known as dementia. In addition, reversible causes of cognitive problems will be discussed. Prereq: PHRM 341 and PHRM 536.

PHRM 551L. Pharmacy Practice Laboratory III. 2 Credits.

This course is a hands-on skills laboratory course in contemporary pharmacy practice. Learners will engage in activities and simulations which provide hands-on practice of ambulatory care learning topics in various practice settings. Prereq: PHRM 351L with a grade of C or higher. Coreq: PHRM 545L.

PHRM 552L. Pharmacy Practice Laboratory IV. 2 Credits.

Coursework will assist Doctor of Pharmacy candidates to develop competence in recognizing, analyzing, and resolving drug related problems; providing accurate drug information and education; promoting public health and managing a patient oriented pharmacy practice. Prereq: PHRM 551L and PHRM 545L both with a grade of C or higher.

PHRM 553. Pharmacy-Based Point-of-Care Testing Certificate Program. 1 Credit.

To provide students with the knowledge of assessment, testing, follow-up care and management principles necessary to operate a successful point-of-care testing program in community pharmacies. Successful completion of the course will result in a National Association of Chain Drug Stores Point of Care Testing Certificate. This course is a combination of live lectures and home study material. Prereq: PHRM 452L and PHRM 532 with a grade of C or higher.

PHRM 560. Specialty Care Topics. 2 Credits.

This course will provide knowledge of specialty topics encountered in pharmacy practice. Prereq: PHRM 537, PHRM 538 both completed with a grade of C or higher.

PHRM 565. Pharmacy-Based Immunization Delivery. 1 Credit.

This course will provide knowledge of immunology, vaccine-preventable diseases, indications for vaccination, and implementation and maintenance of a pharmacy-based vaccination program. Prereq: MICR 470.

PHRM 570. Pharmacy Practice Improvement and Project Management. 2 Credits.

Students will gain a basic understanding of performance improvement and projects they may be expected to complete on a rotation or as a new practitioner. Prereq: PHRM 353 (or PHRM 350 and PHRM 352) and PHRM 480 with a Grade of C or better. {Also offered for graduate credit - see PHRM 670.}.

PHRM 572. Pharmacy Law and Ethical Considerations. 3 Credits.

Pharmaceutical jurisprudence, including state and federal laws and ethical issues concerned with the practice of pharmacy. Prereq: PHRM 353 and PHRM 452L all with a grade of C or higher.

PHRM 575. Pharmacy Practice Management. 3 Credits.

This course introduces students to management techniques applicable to the contemporary practice of pharmacy in community and institutional settings. Prereq: PHRM 353 and PHRM 452L both completed with a grade of C or higher.

PHRM 576. Essentials for Pharmacist Licensure I. 1 Credit.

Part 1 of a comprehensive self-directed plan designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum in preparation for national pharmacist licensing examinations. Registration by permit only. Prereq: PHRM 500, PHRM 520, PHRM 540, PHRM 545L, PHRM 552L, PHRM 560, PHRM 570, PHRM 572, PHRM 575, PHRM 580 all with a grade C or higher.

PHRM 577. Essentials for Pharmacist Licensure II. 2 Credits.

Part 2 of a comprehensive self-directed plan designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum in preparation for national pharmacist licensing examinations. Enrollment is by permission only. Prereq: PHRM 576.

PHRM 578. Essentials for Pharmacist Licensure III. 2 Credits.

Part 3 of a comprehensive self-directed plan designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum in preparation for national pharmacist licensing examinations. Enrollment by permit only. Prereq: PHRM 577.

PHRM 580. Pharmacotherapy Capstone. 3 Credits.

Using clinical practice guidelines, current scientific literature, and pharmacotherapy concepts, students will evaluate integrated patient case scenarios. Prereqs: A grade of C or higher in PHRM 532, PHRM 534, PHRM 536, PHRM 537, PHRM 538, and PHRM 545L.

PHRM 581. Advanced Pharmacy Practice Experience - Rotation I. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes and values developed through the other components of the curriculum. Enrollment by departmental permission only.

PHRM 582. Advanced Pharmacy Practice Experience - Rotation II. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes and values developed through the other components of the curriculum.

PHRM 583. Advanced Pharmacy Practice Experience - Rotation III. 1-5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes and values developed through the other components of the curriculum. Restrictions: Department permission required.

PHRM 584. Advanced Pharmacy Practice Experience - Rotation 4. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. Prereq: Successful completion of third professional year. Restrictions: Department permission required.

PHRM 585. Advanced Pharmacy Practice Experience - Rotation 5. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. Prereq: Successful completion of third professional year. Restrictions: Department permission required.

PHRM 586. Advanced Pharmacy Practice Experience - Rotation 6. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. Prereq: Successful completion of third professional year. Restrictions: Department permission required.

PHRM 587. Advanced Pharmacy Practice Experience - Rotation 7. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. Prereq: Successful completion of third professional year. Restrictions: Department permission required.

PHRM 588. Advanced Pharmacy Practice Experience - Rotation 8. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. Prereq: Successful completion of third professional year. Restrictions: Department permission required.

PHRM 589. Advanced Pharmacy Practice Experience - Rotation 9. 5 Credits.

Experiential clinical training designed to integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. Prereq: Successful completion of third professional year. Restrictions: Department permission required.

PHRM 590. Graduate Seminar. 1-3 Credits.**PHRM 593. Individual Study/Tutorial. 1-5 Credits.****PHRM 595. Field Experience. 1-15 Credits.****PHRM 596. Special Topics. 1-5 Credits.****PHRM 620. Special Populations. 3 Credits.**

Focused on providing pharmaceutical care for a variety of populations including men, women, pediatric and geriatric patients. Prereq: PHRM 532, PHRM 537 and PHRM 538, all with a grade of C or better. {Also available for professional credit - See PHRM 520.}

PHRM 625. Instructional Design for Health Professionals. 2 Credits.

Build basic skills to design and implement effective instructional activities ranging from pharmacy-specific professional education (e.g. patient education, inter-professional medication-related presentations) to college-level instructional tasks. {Also offered for undergraduate credit - see PHRM 425.}

PHRM 632. Infectious Disease. 3 Credits.

This course is a clinical, patient-oriented approach to infectious disease. The instructors will review antimicrobial agents combined with specific infectious disease processes and therapies to help the students make appropriate judgments on infectious disease problems. Prereq: MICR 470, PSCI 412 both with a grade of C or higher. {Also offered for professional credit - see PHRM 532.}

PHRM 638. PTDI: Cardiovascular and Pulmonary Diseases. 4 Credits.

Pharmacotherapy of cardiovascular and pulmonary diseases. Study of the pathophysiology, clinical presentation, and treatment of various cardiovascular and pulmonary diseases.

PHRM 640. Public Health for Pharmacists. 3 Credits.

Pharmacy students will be introduced to public health services, health disparities, emergency preparedness, epidemiology, behavioral health, health promotion, and global health. {Also offered for professional credit - see PHRM 540.}

PHRM 653. Complementary and Alternative Therapies: An Evidence-Based Approach. 2 Credits.

This course is designed to provide health professions students with an overview of each form of complementary and alternative medicine (CAM) commonly practiced in the United States. Students will develop knowledge, skills, and practical tools necessary to understand and evaluate CAM, and provide recommendations for appropriate use to patients or other health care professionals. While specific products will be discussed when appropriate, the emphasis is on broad systems of treatment. Prereq or Coreq: Enrollment in MPH program or instructor permission. Dual-listing: PHRM 453.

PHRM 654. Scientific Writing for Health Professionals. 2 Credits.

Explores skills and concepts for communicating with scientific, patient, and public audiences with an emphasis on audience and context analysis. Students will choose projects that advance their professional goals. Dual-listing: PHRM 454.

PHRM 670. Pharmacy Practice Improvement and Project Management. 2 Credits.

Students will gain a basic understanding of pharmacy practice improvement and projects they may be expected to complete on a rotation or as a new practitioner. {Also offered for professional credit - see PHRM 570.}

PHRM 675. Pharmacy Management. 3 Credits.

This course introduces students to management techniques applicable to the contemporary practice of pharmacy in community and institutional settings.

PHRM 696. Special Topics. 1-5 Credits.**PHRM 795. Field Experience. 1-15 Credits.**