

**UNIVERSITY OF PITTSBURGH
SCHOOL OF PHARMACY**

DOCTOR OF PHARMACY CURRICULUM

Term 1	Course No.	Units	Term 2	Course No.	Units
PROFESSIONAL YEAR 1					
Profession of Pharmacy 1 ^a	PHARM 5110	4	Profession of Pharmacy 2 ^a	PHARM 5111	4
Experiential Learning 1*	PHARM 5112	1	Experiential Learning 2*	PHARM 5113	1
Anatomy & Physiology 1	PHARM 5114	3	Anatomy & Physiology 2	PHARM 5115	3
Biochemistry 1	PHARM 5116	3	Biochemistry 2	PHARM 5117	3
Principles of Drug Action ^b	PHARM 5118	4	Drug Development 1 ^b	PHARM 5119	4
	Total	15		Total	15
PROFESSIONAL YEAR 2					
Profession of Pharmacy 3 ^a	PHARM 5210	3	Profession of Pharmacy 4 ^a	PHARM 5211	4
Experiential Learning 3*	PHARM 5212	1	Experiential Learning 4*	PHARM 5213	1
Pharmacotherapy of Infectious Disease 1 ^b	PHARM 5214	4	Pharmacotherapy of Infectious Disease 2 ^b	PHARM 5215	4
Pharmacotherapy of Cardiovascular Disease	PHARM 5216	4	Drug Development 3 ^b	PHARM 5219	4
Drug Development 2 ^b	PHARM 5218	4	Gastroenterology/Nutrition	PHARM 5223	2
			Advanced Pharmaceutical Care 1	PHARM 5225	1
	Total	16		Total	16
PROFESSIONAL YEAR 3					
Profession of Pharmacy 5 ^b	PHARM 5310	3	Profession of Pharmacy 6 ^b	PHARM 5311	2
Experiential Learning 5*	PHARM 5312	1	Experiential Learning 6*	PHARM 5313	1
Immunology	PHARM 5314	3	Oncology/Hematology	PHARM 5315	3
Pulmonology/Rheumatology	PHARM 5316	2	Neurology/Psychiatry	PHARM 5319	4
Endocrinology	PHARM 5318	3	Advanced Pharmaceutical Care 2	PHARM 5321	2
Professional Elective		3	Professional Elective		3
	Total	15		Total	15
PROFESSIONAL YEAR 4 Spans 3 semesters (SUMMER, FALL, SPRING) with several options for units earned per semester, for a Total of 37 units.					
Advanced Pharmacy Practice Skills Enhancement	PHARM 5410	1	Advanced Pharmacy Practice Experience 5*	PHARM 5405	5
Advanced Pharmacy Practice Experience 1*	PHARM 5401	5	Advanced Pharmacy Practice Experience 6*	PHARM 5406	5
Advanced Pharmacy Practice Experience 2*	PHARM 5402	5	Advanced Pharmacy Practice Experience 7*	PHARM 5407	5
Advanced Pharmacy Practice Experience 3*	PHARM 5403	5	PharmD Seminar	PHARM 5400	1
Advanced Pharmacy Practice Experience 4*	PHARM 5404	5			

a Includes two 3-hour practicum sessions per week.

b Includes one 3-hour practicum session per week.

* **Please note** that these courses require that you complete experiential rotations at facilities external to the University, and such facilities will or may require a criminal background check, a child abuse history clearance, a drug screen, and other criteria as outlined on the Experiential Learning web page. If you are unable to satisfy these requirements, the University may be unable to place you in a rotation setting and as a result you may be unable to complete the graduation requirements of the pharmacy program and obtain professional licensure.

DOCTOR OF PHARMACY DEGREE - COURSE DESCRIPTIONS

PROFESSIONAL YEAR 1

Pharm 5110 & 5111 – Profession of Pharmacy 1 and 2

Supports students' development of competence in four major areas: clinical skills, the psychosocial dimensions of pharmacy practice, managing as a professional pharmacist, and professional inquiry.

Pharm 5112 & 5113 – Experiential Learning 1 and 2

Field-based experiences that provide students with opportunities to examine the role of pharmacists in the community. Students work with community agencies that provide essential services to underserved populations. Students are expected to develop communication skills and an awareness of the skills and attitudes required to practice pharmacy.

Pharm 5114 & 5115 – Anatomy and Physiology 1 and 2

A two-course sequence that provides an integrated presentation of human anatomy and physiology. Information about each system is presented to explain the processes involved in homeostasis so that students will develop an understanding of the working of the entire human body. Wherever appropriate, information about mechanisms of action of selected drugs is presented.

Pharm 5116 – Biochemistry 1

Enables students to appreciate the chemical processes that govern the function of living systems, the molecular basis of disease, the biochemical rationale for the therapeutic use of drugs, and the biochemical basis of clinical diagnostic procedures.

Pharm 5117 – Biochemistry 2

Course builds on principles introduced in Biochemistry 1. First portion of course covers topics in molecular biology and gene regulation, particularly as they relate to the etiology and treatment of disease. Second portion of course covers the intermediary metabolism of carbohydrates, proteins, and lipids. Emphasis is placed on errors of intermediary metabolism responsible for human disease.

Pharm 5118 – Principles of Drug Action

Introduces students to basic principles of drug-receptor interactions, drug design and development, pharmacokinetics and pharmacodynamics, and structure-activity relationships. Through cases analyses and problem sets students apply these principles to basic therapeutic problems.

Pharm 5119 – Drug Development 1

Traces the development of drugs from discovery through the early stages of the drug approval process. Introduces students to a variety of drug sources including natural and synthetic sources, and drugs manufactured using biotechnology. Alternatives to drugs, including gene therapy are also discussed. Students learn principles of drug analysis, drug metabolism and the drug approval process.

PROFESSIONAL YEAR 2

Pharm 5210 & 5211 – Profession of Pharmacy 3 and 4

Supports students' development of competence in four major areas: clinical skills, social science in pharmacy, managing as a professional pharmacist, and professional inquiry.

Pharm 5212 & 5213 – Experiential Learning 3 and 4

Field-based experiences that provide students with opportunities to develop proficiency in carrying out the pharmaceutical care process. Students are expected to develop basic dispensing and counseling skills and collect and interpret data from the practice site. Students practice inquiry skills by generating questions from their practice site that are answered using a systematic approach for answering drug-related questions.

Pharm 5214 & 5215 – Pharmacotherapy of Infectious Disease 1 and 2

A two-course sequence that introduces students to the organisms responsible for infectious diseases, the epidemiology and pathophysiology of infection, the immunology of host defenses, and the thought process leading to cost-effective and safe antimicrobial drug use. Students are expected to be able to select and monitor the therapy of various bacterial, fungal and viral infections.

Pharm 5216 – Pharmacotherapy of Cardiovascular Disease

Provides a comprehensive evaluation of the pathophysiology and treatment of cardiovascular disease. The pharmacology and therapeutic use of cardiovascular drugs is presented in relation to the management of hypertension, coronary artery disease, heart failure, arrhythmia, thromboembolic disorders, and acute myocardial infarction.

Pharm 5218 – Drug Development 2: Pharmacokinetics

Provides students with more advanced understanding of the mathematical relationships that describe the rate and extent of drug absorption, distribution, metabolism, and elimination. Students are expected to be able to design rational therapeutic regimens that account for inter-individual variations in absorption, distribution, metabolism and elimination.

Pharm 5219 – Drug Development 3: Dosage Forms

A systematic study of the physio-chemical principles involved in the development of pharmaceutical dosage forms. Students are expected to demonstrate mastery of pharmaceutical calculations.

Pharm 5223 – Gastroenterology/Nutrition

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected gastrointestinal diseases and states of nutritional deficiency. Students develop the ability to design, monitor, and refine safe and cost-effective treatment plans and provide appropriate information to patients, caregivers, and health professionals.

Pharm 5225 – Advanced Pharmaceutical Care 1

Students integrate knowledge and skills to design, monitor, assess and refine safe and cost-effective treatment plans, as well as design appropriate information materials for patients, caregivers, and health professionals. Expanding on knowledge of disease states and therapies reviewed in previous or concurrent courses, students will be challenged in "capstone" experiences to manage pharmaceutical care problems in ambulatory and acute care settings.

PROFESSIONAL YEAR 3

Pharm 5310 & 5311 – Profession of Pharmacy 5 and 6

Supports students' development of competence in four major areas: clinical skills, the psychosocial dimensions of pharmacy practice, managing as a professional pharmacist, and professional inquiry. Students learn about the legal regulation of pharmacy practice, the principles of pharmacoeconomics, drug use and disease state management, and institutional pharmacy systems and practice.

Pharm 5312 & 5313 – Experiential Learning 5 and 6

Field-based experiences that provide students with opportunities to observe and participate in institutional practice activities such as drug distribution and preparation, evaluating and monitoring patient-specific therapies, pharmacy systems, quality assessment, and formulary control.

Pharm 5314 – Immunology

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected diseases of the immune system. Students develop the ability to design, monitor, and refine safe and cost-effective treatment plans and provide appropriate information to patients, caregivers and health professionals.

Pharm 5315 – Oncology/Hematology

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of various types of cancer and diseases of the blood. Students develop the ability to design, monitor, and refine safe and cost-effective treatment plans and provide appropriate information to patients, caregivers, and health professionals.

Pharm 5316 – Pulmonology/Rheumatology

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected pulmonary and rheumatic diseases. Students develop the ability to design, monitor and refine safe and cost-effective treatment plans and provide appropriate information to patients, caregivers and health professionals.

Pharm 5318 – Endocrinology

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected disorders of the endocrine system. Students develop the ability to design, monitor and refine safe and cost-effective treatment plans and provide appropriate information to patients, caregivers, and health professionals.

Pharm 5319 – Neurology/Psychiatry

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected neurological and psychiatric disorders. Students develop the ability to design, monitor, and refine safe and cost-effective treatment plans and provide appropriate information to patients, caregivers, and health professionals.

Pharm 5321 – Advanced Pharmaceutical Care 2

Students integrate knowledge and skills to design, monitor, assess and refine safe and cost-effective treatment plans, as well as design appropriate information materials for patients, caregivers, and health professionals. Expanding on knowledge of disease states and therapies reviewed in previous or concurrent courses, students will be challenged in "capstone" experiences to manage pharmaceutical care problems in ambulatory, acute care, and critical care settings.

PROFESSIONAL YEAR 4

Pharm 5400 – PharmD Seminar

Students demonstrate effective communication and organizational skills by preparing, delivering, and evaluating professional seminars.

Pharm 5401 – 5407 – Advanced Pharmacy Practice Experience 1-7

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Pharm 5410 – Advanced Pharmacy Practice Skills Enhancement

Students obtain skills required to successfully complete Advanced Pharmacy Practice Experiences. Modules will include Red Cross and Basic Life Support certification, active learning exercises with patients and preceptors, and review of objectives, goals, and protocols associated with each type of rotation.