

**The Ohio State University
College of Pharmacy**

ENTRY LEVEL DOCTOR OF PHARMACY CURRICULUM

Professional Requirements

The entry-level PharmD curriculum includes required sequences of coursework in physiology, pharmaceuticals and drug delivery systems, medicinal chemistry, biopharmacy, pharmacy practice, pharmacology, pathophysiology and therapeutics, clinical pharmacokinetics, and pharmacy management. Additional courses relating to biotechnology and jurisprudence are also required. Course pedagogical techniques include lectures, laboratories, recitations, case conferences, workshops, and Professional Experience Program rotations precepted by clinical faculty within ambulatory and inpatient practice sites. A thread of experiential activities, beginning in the first year, reinforces the didactic component of the curriculum, culminating in full-time advanced practice experiences in the final year. A minimum of 10 hours of professional electives are also required. The required coursework for the entry-level PharmD program and scheduling sequences are outlined below.

Required First-Year Courses

Pharmacy 601 (Biopharmacy I)

Pharmacy 602 (Biopharmacy II)

A two-course sequence which provides the fundamental background in modern molecular life science required for pharmacy studies.

Pharmacy 605 (Medicinal Chemistry I)

An introduction to functional group properties of importance to drugs, heterocycles, acidity and basicity, metabolism, prediction of ionization constants and physicochemical properties of drugs. Chemical and biochemical principles governing the properties of drugs. Drug categories include: Drugs affecting the central nervous system.

Pharmacy 606 (Medicinal Chemistry II)

Chemical and biochemical principles governing the properties of drugs. Drug categories include: Anti-hypertensive agents, antilipidemic agents, anticoagulants, and antihistamines.

Pharmacy 607 (Medicinal Chemistry III)

Chemical and biochemical principles governing the properties of drugs. Main focus will include the chemotherapy of cancer and infectious diseases.

Pharmacy 621 (Drug Delivery I)

Principles that govern the design and use of solution dosage forms, including physicochemical properties, ionization, solubility, and stability.

Pharmacy 622 (Drug Delivery II)

Routes of drug administration and the physiologic and physicochemical factors that influence drug penetration, absorption, and bioavailability.

Pharmacy 623 (Drug Delivery III)

Application of physicochemical principles to the design, formulation, manufacture, and use of colloids, suspensions, emulsions, solid and topical drug delivery systems.

Pharmacy 624 (Pharmaceutical Calculations)

Introduction to prescription terminology and pharmaceutical calculations: emphasis on measurement systems, conversions, percent preparations, units of concentrations, calculation of doses, dilutions, milliequivalents, and milliosmoles.

Pharmacy 661 (Pharmacy Practice I)

The first in a three-course sequence covering concepts fundamental to pharmacy practice. Topics include orientation to the profession, history, ethics, communications, and jurisprudence.

Pharmacy 662 (Pharmacy Practice II)

The second in a three-course sequence covering concepts fundamental to pharmacy practice with a focus on techniques used to search and evaluate the medical and pharmaceutical literature.

Pharmacy 664 (Introductory Pharmacy Practice Experience)

Introductory experiences in pharmacy practice including hospital pharmacy, community pharmacy and a service learning, geriatric rotation. Students also have opportunities to shadow pharmacists and pharmacy students to explore potential career options.

Pharmacy 673 (Pharmacy Practice Management I)

The first in a three-course pharmacy practice management sequence. This course covers the medication use system and resource management.

Physiology and Cell Biology 601

Physiology and Cell Biology 602

A two-course sequence concerning organ system physiology.

Required Second-Year Courses

Pharmacy 710 (Pharmaceutical Biotechnology I)

Products of biotechnology used as drugs, with an emphasis on immunoactive biomacromolecules employed in prevention, diagnosis and therapy of infectious, allergic, immunodeficiency and other diseases.

Pharmacy 711 (Pharmaceutical Biotechnology II)

Products of biotechnology used as drugs, with an emphasis on antibiotics, anti-cancer agents and other important natural products employed in disease therapy.

Pharmacy 731 (Clinical Pharmacokinetics I)

Pharmacy 732 (Clinical Pharmacokinetics II)

Pharmacy 733 (Clinical Pharmacokinetics III)

A three-course sequence in clinical pharmacokinetics and pharmaco-dynamics and their application to pharmacotherapy.

Pharmacy 747 (Pharmacology I)

Pharmacy 748 (Pharmacology II)

Pharmacy 749 (Pharmacology III)

The first three offerings in a six-course sequence providing a comprehensive study of the therapeutic effects, pharmacodynamics, mechanistic actions, and toxicological effects of important drug classes.

Pharmacy 774 (Professional Practice Laboratory I)

The first in a three-course professional practice laboratory sequence. Topics include use of instruments/references, interpretation of prescription orders, solubility, dissolution, solutions, suspensions, and emulsions.

Pharmacy 775 (Professional Practice Laboratory II)

The second in a three-course professional practice laboratory sequence. Topics include semisolids in rectal and vaginal preparations, powders, capsules, ophthalmic preparations, and sterile dosage forms.

Pharmacy 776 (Professional Practice Laboratory III)

The third in a three-course professional practice laboratory sequence. Topics include cancer chemotherapy, radioisotopes, immunoassay techniques, total parenteral nutrition, and individualized projects.

Pharmacy 777 (Pathophysiology and Therapeutics I)

The first in a six-course sequence in pathophysiology and pharmacotherapy. Development of patient assessment and problem solving skills to construct therapeutic plans.

Pharmacy 778 (Pathophysiology and Therapeutics II)

The second in a six-course sequence in pathophysiology and pharmacotherapy. Cardiovascular and renal disorders.

Pharmacy 779 (Pathophysiology and Therapeutics III)

The third in a six-course sequence in pathophysiology and pharmacotherapy. Psychiatric and other central nervous system disorders.

Required Third-Year Courses

Pharmacy 724 (Clinical Pharmacogenomics)

Principles and techniques necessary to understand the role of genetic variation in the pharmacokinetics of drugs and therapeutic management of disease.

Pharmacy 750 (Pharmacology IV)

Pharmacy 751 (Pharmacology V)

Pharmacy 752 (Pharmacology VI)

The last three offerings in a six-course sequence providing a comprehensive study of the therapeutic effects, pharmacodynamics, mechanistic actions, and toxicological effects of important drug classes.

Pharmacy 763 (Nonprescription Therapeutics)

An overview of non prescription therapeutics with a focus on patient assessment, product recommendations and patient care plans.

Pharmacy 780 (Pathophysiology and Therapeutics IV)

The fourth in a six-course sequence in pathophysiology and pharmacotherapy. Endocrine, hematologic, respiratory, and immunologic.

Pharmacy 781 (Pathophysiology and Therapeutics V)

The fifth in a six-course sequence in pathophysiology and pharmacotherapy. Infectious diseases, bone and joint, obstetric/gynecologic, and genitourinary disorders.

Pharmacy 782 (Pathophysiology and Therapeutics VI)

The sixth in a six-course sequence in pathophysiology and pharmacotherapy. Oncologic, fluid and electrolyte, gastrointestinal, nutritional, pediatric, and multi-system disorders.

Pharmacy 784 (Intermediate Pharmacy Practice Experience)

Experiential activities in community pharmacies, student health pharmacy and ambulatory clinics that focus on skills necessary for advanced practice rotations. (ie Pharmacy 799). Students also engage in service learning activities and complete training in CPR, immunization administration, and diabetes screening.

Pharmacy 786 (Pharmacy Practice Management II)

The second in a three-course sequence in pharmacy practice management. This course covers the medication use system and resource management.

Pharmacy 788 (Pharmacy Practice Management III)

The third in a three-course sequence in pharmacy practice management. This course covers the economic evaluation of pharmaceutical services and pharmacoepidemiology.

Pharmacy 790 (Pharmaceutical Jurisprudence)

A study of the laws and regulations relating to the practice of pharmacy.

Required Fourth-Year Courses

Pharmacy 799 (Advanced Pharmacy Practice Experience)

Advanced experience in pharmacy practice including ambulatory, institutional and elective settings.

Pharmacy 693

Community service.

SUMMARY OF ENTRY LEVEL DOCTOR OF PHARMACY CURRICULUM

Note: The curriculum is subject to change. This summary only includes required courses; students must also schedule a minimum of 10 hours of professional electives.

YEAR 1: Autumn

Physiology 601
Med Chem I
Biopharmacy I
Drug Delivery I
Pharm Pract I
Intro Pract Exper

5 hr
3 hr
3 hr
3 hr
3 hr
1 hr

Winter

Physiology 602
Med Chem II
Biopharmacy II
Drug Delivery II
Pharm Pract II
Intro Pract Exper

5 hr
3 hr
3 hr
3 hr
3 hr
1 hr

Spring

Pharm Calc
Med Chem III
Drug Delivery III
Management I
Intro Pract Exper

5 hr
3 hr
3 hr
3 hr
3 hr
1 hr

1 hr
5 hr
4 hr
3 hr
1 hr

YEAR 2: Autumn

Kinetics I
Pharmacology I
Therapeutics I
Practice Lab I
Biotechnology I

4 hr
3 hr
5 hr
3 hr
2 hr

Winter

Kinetics II
Pharmacology II
Therapeutics II
Practice Lab II

4 hr
3 hr
4 hr
3 hr

Spring

Kinetics III
Pharmacology III
Therapeutics III
Practice Lab III
Biotechnology II

4 hr
3 hr
4 hr
3 hr

3 hr
3 hr
4 hr
3 hr
2 hr

YEAR 3: Autumn

Pharmacology IV
Therapeutics IV
Management II
Nonprescrip Therap.
Intermed Pract Exp

3 hr
4 hr
3 hr
3 hr
1 hr

Winter

Pharmacology V
Therapeutics V
Pharmacogenomics
Intermed Pract Exp

3 hr
4 hr
3 hr
1 hr

Spring

Pharmacology VI
Therapeutics VI
Management III
Jurisprudence
Intermed Pract Exp

3 hr
4 hr
3 hr
1 hr

3 hr
5 hr
3 hr
3 hr
1 hr

YEAR 4: Autumn

Advanced Pract Exp 10 hr
Advanced Pract Exp 10 hr

Winter

Advanced Pract Exp 5 hr
Advanced Pract Exp 5 hr
Advanced Pract Exp 5 hr

Spring

Advanced Pract Exp 5 hr
Advanced Pract Exp 5 hr
Community Service 2 hr