

## Pharmacy, PharmD—Direct Entry

The School of Pharmacy and Pharmaceutical Sciences offers the Doctor of Pharmacy degree (PharmD). The direct-entry admission pathway for this program requires that students complete a BS or BA from an accredited institution with a preferred prerequisite grade-point average of 3.000. Only grades of C (2.000) or higher are acceptable to fulfill a prerequisite course. The following prerequisite courses and credits are required:

Requirements	Credits
Chemistry 1 and 2 (1 lab)	7
General biology 1 and 2 (1 lab)	7
Calculus (or higher-level math)	3
Organic chemistry 1 and 2 (w/labs)	8
Biochemistry	3
Anatomy and Physiology 1 and 2	7
Arts/humanities/social studies	4

Direct entry into the first professional year of the PharmD program offers students a four-year graduate course of study that fully integrates campus-based learning with experiential learning, including Northeastern University's signature cooperative education program, to provide students with the knowledge, skills, and abilities necessary to succeed in the pharmacy profession. Our students promote and ensure the safe and effective use of drugs and provide medication therapy management services. In addition to preparing and dispensing prescribed medications, our students provide information to patients about medications and their uses; advise physicians, other prescribers, and other healthcare practitioners on medication selection, dosages, interactions, and adverse effects; and monitor patient responses to drug therapy.

Our students are well equipped to provide patient care services in a variety of settings. Most of our graduates work in community pharmacies or in healthcare facilities such as hospitals and ambulatory clinics. Additional practice opportunities exist in health maintenance organizations, private practice groups, long-term-care facilities, home healthcare, the Public Health Service, the armed services, and law enforcement and regulatory agencies such as the Federal Drug Administration or Drug Enforcement Administration. Graduates may also find employment in drug development, marketing and research within the pharmaceutical industry, colleges of pharmacy, and professional association management. In addition, many of our graduates go on to pharmacy practice residencies, fellowships, and leading graduate programs.

PharmD students are admitted with the expectation that by working with faculty, staff, and each other, they will develop the knowledge, skills, and attitudes necessary for academic and professional success. Students follow academic progression plans for their respective years of graduation. Any deviation from the prescribed curriculum will require faculty/staff permission and an approved plan of study from the SOPPS Academic Standing Committee.

The curriculum includes both Introductory Pharmacy Practice Experiences (fulfilled with co-op) and Advanced Pharmacy Practice Experiences. These pharmacy practice experiences are provided primarily under the direct supervision of qualified pharmacist preceptors and occasionally with other qualified healthcare professionals. The school is affiliated with many world-class practice sites throughout the United States, providing students with access to experienced clinicians and scholars. Although every effort is made to accommodate individual circumstances and requests, students should be prepared to travel outside the Boston area to complete some of their pharmacy practice experiences. Availability of a car may be required, as some sites are not accessible by public transportation. All expenses associated with pharmacy practice experiences, including travel and housing, are the responsibility of the student.

IPPEs are competitive placements that are based on job availability in a geographic region. The placements are facilitated by SOPPS cooperative education coordinators. Students are required to earn satisfactory (S) grades on one IPPE in a community setting and on one IPPE in an institutional/hospital practice setting.

APPE placements are provided based on site/preceptor availability and the final approval of the SOPPS Office of Experiential and Continuing Professional Education. Students may be able to petition the OECPE for out-of-system APPEs; however, availability for such requests is limited.

To be eligible for a PharmD, a student must successfully complete all courses in the curriculum, including the IPPEs/co-op and APPEs; meet the academic progression standards of the program; meet the technical standards of the program; and satisfy all other requirements as stated. The pharmacy program is fully accredited by the Accreditation Council for Pharmacy Education (<https://www.acpe-accredit.org/>) and adheres to the standards established by ACPE.

Pharmacy graduates must meet specific requirements to qualify for professional licensure in the state where they plan to practice as a registered pharmacist. These requirements include graduating from an accredited school of pharmacy, passing national and state board examinations, and completing internship hours. The internship is a period of practical experience conducted under the supervision of a registered pharmacist. Massachusetts requires 1,500 internship hours, all of which are satisfied through completion of IPPEs (co-op) and APPEs.

Professional and/or legal exigencies arise from time to time, which may necessitate changes in a pharmacy course, progression, and/or graduation requirements. Students should review their status with academic advisors on a timely basis and refer to current publications for updated information.

## Requirements for the PharmD Pharmacy Practice Experiences

Requirements for the successful completion of the PharmD PPEs include:

1. Evidence of health clearance from University Health and Counseling Services before placements at any PPE site.
2. Satisfactory completion of any additional site-specific requirements including, but not limited to, criminal record information (CORI), urine drug screens, and verification of immunization status. All fees associated with these requirements are the responsibility of the student.

### Management of Positive Urine Drug Screens

If the student learns the urine drug screen (test #1) is positive (+), the student will notify the OEE ([pharmacyoe@northeastern.edu](mailto:pharmacyoe@northeastern.edu)) and immediately complete a second urine screen (test #2). A professional concern form will be completed based on test #1 results.

If urine screen test #2 is negative (-), the student will be allowed to continue the PPEs. However, the student will be asked to complete a random urine screen (test #3) at a time determined by the OEE. If this urine screen (test #3) is positive, the student will be administratively removed from the active PPEs and graduation may be delayed. A second professional concern form will be completed, based on test #3 results. The return to PPEs will occur once a repeat urine test is negative. That repeat negative test will be followed up by a random urine screen at a time determined by the OEE.

If the urine screen (test #2) is positive, the student will be administratively removed from the PPEs and graduation may be delayed. The return to PPEs will occur once a repeat urine screen is negative. That negative screen will be followed up by a random urine screen at a time determined by the OEE. A second professional concern form will be completed based on a positive test #3 result.

3. Adherence to the school's code of professional conduct and university's code of conduct policies while off-campus.
4. Maintenance of an active pharmacy intern license in every state where the student completes an experience.
5. Compliance with site-specific requirements (via site descriptions) and completion of site requests within specified deadlines. Students who fail to complete these requirements as directed will likely incur grade penalties and may experience a delay of graduation or dismissal from the pharmacy program.

## PROGRAM POLICIES

Students are expected to adhere to the policies and standards of their program major as stated to progress through their curriculum as planned. Students seeking any exceptions to the program policies and standards specified for their program major must present a petition before the SOPPS Academic Standing Committee.

Given programmatic requirements, coupled with concerns over the loss of therapeutic knowledge, requests for a General Leave of Absence (<https://catalog.northeastern.edu/graduate/academic-policies-procedures/policies/>), other than Medical or Emergency Leave of Absence:

- Must comply with all stated Northeastern general policies, regardless of the academic year.
- May be made at any time period during the P1 or P2 years.
- During the P3 academic year, any request for a general leave must be made no later than February 1 of the given academic year. Requests after this date will not be permitted.
- During the P4 academic year, requests for a general leave cannot be made at any time.

SOPPS—Professional Code of Conduct (<https://bouve.northeastern.edu/assets/uploads/sites/5/2021/10/northeastern-school-of-pharmacy-code-of-professional-conduct-2021.pdf>)

Preprofessional and professional-year students are expected to adhere to the Code of Professional Conduct. (<https://bouve.northeastern.edu/wp-content/uploads/2023/10/northeastern-school-of-pharmacy-code-of-professional-conduct-2021.pdf>)

Students are eligible to begin APPEs following successful completion of all didactic coursework. Completing didactic coursework during P4 year is prohibited.

## TECHNICAL STANDARDS FOR THE DOCTOR OF PHARMACY PROGRAM

The PharmD program at Northeastern is a rigorous and challenging academic program that requires students to possess specific characteristics and abilities within the cognitive, affective, and psychomotor domains, referred to here as technical standards. To successfully progress in and ultimately complete the didactic, laboratory, and experiential components of the PharmD program, students must meet the standards described below.

### *Intellectual Abilities*

Students must have well-developed problem-solving and critical-thinking skills. Cognitive function must be appropriate to integrate, evaluate, and apply information gained through measurement, analysis, calculation, and reasoning. Students must have the capacity to learn efficiently in classroom, laboratory, small group and experiential settings, and through independent study. Students are required to demonstrate the ability to integrate course content knowledge with clinical practice applications to optimize medication therapy management.

**Communication Skills**

Students must be able to communicate effectively with colleagues, professors, patients, families, and healthcare providers. This includes efficiently comprehending, speaking, reading, and writing in English. Students must be able to process and use appropriate nonverbal cues and be proficient in the use of electronic communication media.

**Behavioral and Social Attributes**

Students must demonstrate professionalism, maturity, integrity, honesty, compassion, and respect when relating to others. Students must have sufficient mental and emotional health to complete work and responsibilities using good judgment. Students must be able to tolerate and adapt to stressful workloads and situations and modify behavior based on constructive criticism. Students must be able to function in accordance with the legal, ethical, and professional standards of practice.

**Observation and Motor Skills**

Students must have functional use of visual, auditory, and tactile senses. Students must be able to observe and perform experiments, physical assessments, patient interviews, and medication order processing. Students must be able to distinguish physical characteristics of medications by inspection. Students must have coordination of gross and fine muscular movements sufficient to perform pharmacy-related tasks including compounding and dispensing medications, administering medications, and using computers and other technology necessary for learning and professional practice.

**ACADEMIC DISMISSAL FROM MAJOR**

PharmD students in the Bouvé College of Health Sciences will be dismissed from their major effective the following academic semester for any of the reasons noted below:

- Failure to earn a grade of C or better in three professional courses, regardless of remediation. Within the PharmD program, each specific professional course (with separate registration number) will be counted as a separate failure even if content is related.
- Failure to earn the minimum required grade in the same course twice.
- Failure to maintain a GPA of 3.000 after one semester of probation.
- The expected graduation date may not change more than twice.

The PharmD program monitors and promotes the development of professional behaviors in its students in order to ensure appropriate professionalism in the classroom, local and global communities, and clinical settings. Breach of adherence to these standards may result in dismissal from the program.

**ACADEMIC APPEALS**

Students who believe that they were erroneously, capriciously, or otherwise unfairly treated in an academic or cooperative education decision may petition to appeal the decision. Refer to the Bouvé College of Health Sciences Academic Affairs Appeals Process (<https://catalog.northeastern.edu/graduate/health-sciences/academic-policies-procedures/appeals-process/>) and the Northeastern University Academic Appeals Policies and Procedures (<https://catalog.northeastern.edu/undergraduate/academic-policies-procedures/academic-appeals-policies-procedures/>).

**PROGRAM STUDENT LEARNING OUTCOMES**

Please visit Bouvé College Program Learning Outcomes (<https://bouve.northeastern.edu/bchs/about/learning-outcomes/>) for the specific student learning outcomes for this program.

**Program Requirements**

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- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
  - Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.
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Complete all courses and requirements listed below unless otherwise indicated.

**Pharmacy Major (PharmD) Grade and Progression Requirement**

To progress into the subsequent semester of professional courses, students must receive a grade of C or better in all PHMD and PHSC courses, as well as in any course completed to fulfill the professional elective requirement.

For pharmacy students, an unsatisfactory grade (U) in a co-op will be counted as a professional course deficiency.

Students who incur an incomplete grade in a prerequisite course may not progress into the subsequent courses(s). Any exceptions will be determined by protocols established by the program, after consultation with the student's academic advisor.

**Core Requirements**

<b>Code</b>	<b>Title</b>	<b>Hours</b>
<b>YEAR 1</b>		
PHMD 5115	Integrated Science and Therapeutics 2	4
PHMD 5120	Principles of Pharmacy Practice	4
PHMD 5140	Integrated Social and Administrative Sciences 1	4
PHMD 5182	Integrated Learning Lab 2	1
PHMD 5191	Concepts in Practice 1	1
PHMD 5192	Concepts in Practice 2	1
PHMD 6964	Co-op Work Experience (Introductory Pharmacy Practice Experience) <sup>1</sup>	0
PHSC 5110	Integrated Science and Therapeutics 1	4
PHSC 5130	Foundations of Pharmaceutical Sciences 1	4
PHSC 5181	Integrated Learning Lab 1	1
<b>YEAR 2</b>		
PHMD 5210	Integrated Science and Therapeutics 4	4
PHMD 5215	Integrated Science and Therapeutics 5	4
PHMD 5220	Integrated Science and Therapeutics 6	4
PHMD 5240	Integrated Social and Administrative Sciences 2	4
PHMD 5245	Integrated Social and Administrative Sciences 3	4
PHMD 5283	Integrated Learning Lab 3	1
PHMD 5284	Integrated Learning Lab 4	1
PHMD 5285	Integrated Learning Lab 5	1
PHMD 5293	Concepts in Practice 3	1
PHMD 5294	Concepts in Practice 4	1
PHMD 5295	Concepts in Practice 5	1
PHSC 5205	Integrated Science and Therapeutics 3	4
PHSC 5230	Foundations of Pharmaceutical Sciences 2	4
<b>YEAR 3</b>		
PHMD 5320	APPE Readiness	4
PHMD 5335	Integrated Science and Therapeutics 7	4
PHMD 5345	Integrated Social and Administrative Sciences 4	4
PHMD 5386	Integrated Learning Lab 6	1
PHMD 5396	Concepts in Practice 6	1
PHMD 6964	Co-op Work Experience (Introductory Pharmacy Practice Experience) <sup>1</sup>	0
<b>YEARS 3 and 4</b>		
Complete 36 semester hours of Advanced Pharmacy Practice Experience (APPE) from the following:		36
PHMD 6440	Internal Medicine Advanced Pharmacy Practice Experience	
PHMD 6441	Acute Care Advanced Pharmacy Practice Experience	
PHMD 6442	Ambulatory Care Advanced Pharmacy Practice Experience	
PHMD 6443	Community Advanced Pharmacy Practice Experience	
PHMD 6445	Ambulatory Care Elective Advanced Pharmacy Practice Experience	
PHMD 6446	Psychiatry Advanced Pharmacy Practice Experience	
PHMD 6447	Community Elective Advanced Pharmacy Practice Experience	
PHMD 6448	Long-Term Care Advanced Pharmacy Practice Experience	
PHMD 6449	Geriatrics Advanced Pharmacy Practice Experience	
PHMD 6450	Pediatrics Advanced Pharmacy Practice Experience	
PHMD 6451	Neonatology Advanced Pharmacy Practice Experience	
PHMD 6452	Critical Care Advanced Pharmacy Practice Experience	
PHMD 6453	Surgery Advanced Pharmacy Practice Experience	
PHMD 6454	Cardiology Advanced Pharmacy Practice Experience	
PHMD 6456	Drug Information Advanced Pharmacy Practice Experience	
PHMD 6457	Oncology Advanced Pharmacy Practice Experience	
PHMD 6461	Infectious Disease Advanced Pharmacy Practice Experience	

PHMD 6462	Pharmacy Industry Advanced Pharmacy Practice Experience
PHMD 6463	Pharmacy Administration Advanced Pharmacy Practice Experience
PHMD 6464	Regulatory Advanced Pharmacy Practice Experience
PHMD 6465	Managed Care Advanced Pharmacy Practice Experience
PHMD 6466	Transplantation Advanced Pharmacy Practice Experience
PHMD 6467	Directed Practice Advanced Pharmacy Practice Experience
PHMD 6468	International Advanced Pharmacy Practice Experience
PHMD 6469	Management Advanced Pharmacy Practice Experience
PHMD 6470	Education Advanced Pharmacy Practice Experience
PHMD 6471	Research 1 Advanced Pharmacy Practice Experience
PHMD 6473	Radiopharmacy Advanced Pharmacy Practice Experience

<sup>1</sup> For pharmacy students, an unsatisfactory grade (U) in a co-op will be counted as a professional course deficiency.

## Elective Requirements

Code	Title	Hours
<b>Open Electives</b>		
A minimum of 8 semester hours of open electives is required.		8
<b>Professional Electives</b>		
Complete at least 2 semester hours from the following:		2
CAEP 6203	Understanding Culture and Diversity	
HINF 5101	Introduction to Health Informatics and Health Information Systems	
HINF 5102	Data Management in Healthcare	
HINF 5300	Personal Health Interface Design and Development	
HINF 5407	Business Application of Decision Support in Healthcare	
HINF 6205	Creation and Application of Medical Knowledge	
HINF 6220	Database Design, Access, Modeling, and Security	
HINF 6335	Management Issues in Healthcare Information Technology	
HINF 6404	Patient Engagement Informatics and Analytics	
HLTH 5002	Mindfulness: Theory and Practice	
HLTH 5200	Magic and Healthcare: A Scientific Exploration	
HLTH 5280	The (in)Visibility of (dis)Ability in Society	
HLTH 5310	Introduction to Transgender Perspectives in Healthcare	
HLTH 5600	Introduction to Patient Safety	
HLTH 5700	Social Determinants of Health	
HSCI 5130	Introduction to Real-World Evidence	
HSCI 5140	Foundations of Data Models	
HSCI 5150	Methods for Observational Research 1	
HSCI 5151	Methods for Observational Research 2	
HSCI 5160	Standardization of Real-World Data	
HSCI 5170	Data Model Transformation	
HSCI 5180	Phenotyping	
HSCI 5190	Cohort Building	
HSCI 6110	Advanced Population Characterization	
HSCI 6120	Advanced Population Estimation	
HSCI 6130	Advanced Patient Prediction	
MSCI 5001	Human Factors and Situational Awareness	
MSCI 5002	Crisis Resource Management and Case Studies	
MSCI 5003	Humanitarian Aid Practice and Principles	
MSCI 5004	Humanitarian and Disaster Response Ethics	
MSCI 5005	Care During Conflict	
PHMD 3600	Leadership and Advocacy in Health Professions	
PHMD 4350	Exploring Academic Careers	
PHMD 4581	Cancer Chemotherapy	

PHMD 4585	Research Methods in Health Systems
PHMD 4700	Principles in General Medicine
PHMD 4890	Contemporary Issues in Geriatric Pharmacy
PHMD 5223	Evidence-Based Medicine
PHMD 5575	Pharmaceutical Industry
PHMD 5675	Ambulatory Care Pharmacy Practice in Urban Health
PHMD 5900	Self-Care and Nonprescription Medications: A Team-Based Approach
PHMD 5976	Directed Study
PHMD 5984	Research
PHSC 5100	Concepts in Pharmaceutical Science
PHSC 5212	Research Skills and Ethics
PHSC 5400	Principles of Drug Design
PHSC 5500	Repurposing Drugs for Cancer Immunotherapies
PHSC 5555	Pharmaceutical Toxicology
PHSC 5976	Directed Study
PHSC 5984	Research
PHSC 6222	The Chemistry and Biology of Drugs of Abuse
PHSC 6224	Behavioral Pharmacology and Drug Discovery
PHSC 6290	Biophysical Methods in Drug Discovery
PHTH 5222	Health Advocacy
PHTH 5226	Strategic Management and Leadership in Healthcare
PHTH 5230	Global Health
PHTH 5232	Evaluating Healthcare Quality
PHTH 5234	Economic Perspectives on Health Policy
PHTH 5300	Project Management in Public Health
PHTH 5310	Budget Principles in Public Health
PHTH 5320	Grant Writing in Public Health
PHTH 6320	Qualitative Methods in Health and Illness
PMST 6250	Advanced Physical Pharmacy
PMST 6252	Pharmacokinetics and Drug Metabolism
PMST 6254	Advanced Drug Delivery Systems

## Program Credit/GPA Requirements

118 total semester hours required

Minimum 3.000 GPA required

## Plan of Study

### Sample Plan of Study

#### Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Professional Year 1 (P1)		Professional Year 1 (P1)		Professional Year 1 (P1)		Professional Year 1 (P1)	
PHMD 5120	4	PHMD 6964 (IPPE)	0	PHMD 6964	0	PHMD 5115	4
PHMD 5140	4					PHMD 5182	1
PHMD 5191	1					PHMD 5192	1
PHSC 5110	4					Elective	2-4
PHSC 5130	4						
PHSC 5181	1						
	<b>18</b>		<b>0</b>		<b>0</b>		<b>8-10</b>

#### Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Professional Year 2 (P2)		Professional Year 2 (P2)		Professional Year 2 (P2)		Professional Year 2 (P2)	
PHMD 5240	4	PHMD 5210	4	PHMD 5220	4	PHMD 6964	0
PHMD 5283	1	PHMD 5215	4	PHMD 5285	1		
PHMD 5293	1	PHMD 5245	4	PHMD 5295	1		

PHSC 5205	4	PHMD 5284	1	Elective	2-4		
PHSC 5230	4	PHMD 5294	1				
Elective	2-4	Elective	2-4				
<b>14-16</b>		<b>14-16</b>		<b>6-8</b>		<b>0</b>	

**Year 3**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Professional Year 3 (P3)		Professional Year 3 (P3)		Professional Year 4 (P4)		Professional Year 4 (P4)	
PHMD 6964	0	PHMD 5320	4	APPE (choose from PHMD 6440–PHMD 6474)	6	APPE (choose from PHMD 6440–PHMD 6474)	6
		PHMD 5335	4				
		PHMD 5345	4				
		PHMD 5386	1				
		PHMD 5396	1				
		Elective	2-4				
<b>0</b>		<b>14-16</b>		<b>6</b>		<b>6</b>	

**Year 4**

Fall	Hours	Spring	Hours
APPE (choose from PHMD 6440–PHMD 6474)	6	APPE (choose from PHMD 6440–PHMD 6474)	6
APPE (choose from PHMD 6440–PHMD 6474)	6	APPE (choose from PHMD 6440–PHMD 6474)	6
<b>12</b>		<b>12</b>	

**Total Hours: 110-120**