

# Pharmacy Doctorate (Pharm.D.) Program

The Pharmacy program encompasses both the basic and clinical sciences and is designed to provide students with the knowledge, skills, and attitudes essential to the practice of pharmacy. Pharmacists work in concert with the patient and other health care providers to promote health and prevent diseases. This is achieved by assessing, monitoring, initiating and modifying patients' medication therapy to achieve optimal therapeutic outcomes.

The pharmacy curriculum consists of a four year professional program leading to the Pharm.D. degree. Students enter the program in pre-pharmacy upon meeting general admission standards of the university and must satisfy all required pre-pharmacy coursework prior to beginning the professional program. Students are admitted to the final four professional years on a competitive basis, and must meet specific admission requirements of the college. The program leads to a Doctor of Pharmacy degree (Pharm.D.). For admission requirements to the professional program, contact the Dean's Office of the college. Students attending other institutions must maintain frequent contact with the college to determine appropriate course work. The pre-pharmacy course work may be completed at other institutions if course work has been submitted for formal NDSU review and determined to be equivalent to NDSU requirements.

The current entry-level Pharm.D. curriculum is designed to produce graduates with the professional competencies necessary to enter pharmacy practice in any setting to ensure optimal medication therapy outcomes and patient safety, and to satisfy the educational requirements for licensure as a pharmacist. The Pharm.D. degree prepares the student to accept positions in community, hospital, managed care, clinical, and industrial pharmacy. Other potential opportunities include administrative positions in pharmaceutical companies and associations. Teaching and research positions in universities and the pharmaceutical industry are excellent opportunities for those with advanced training in pharmacy.

The college is a member of the American Association of Colleges of Pharmacy, and is accredited by the Accreditation Council for Pharmacy Education (ACPE).

## Major Requirements

### Major: Pharmaceutical Sciences

**Degree Type:** B.S.

**Required Degree Credits to Graduate:** 148-154

### General Education Requirements

#### First Year Experience (F):

PHRM 189	Skills for Academic Success (Students transferring in 24 or more credits do not need to take PHRM 189.)	1
----------	---	---

#### Communication (C):

ENGL 110	College Composition I	3
ENGL 120	College Composition II * 1	3
ENGL 324	Writing in the Sciences	3
or ENGL 325	Writing in the Health Professions	
COMM 110	Fundamentals of Public Speaking *	3

#### Quantitative Reasoning (R):

MATH 146	Applied Calculus I *	4
----------	----------------------	---

#### Science & Technology (S):

CHEM 121	General Chemistry I *	3
CHEM 121L	General Chemistry I Laboratory	1
CHEM 122	General Chemistry II *	3
PHYS 211	College Physics I	3

#### Humanities & Fine Arts (A): Select from current general education list

#### Social & Behavioral Sciences (B):

COMM 216	Intercultural Communication *	3
ECON 201	Principles of Microeconomics *	3

#### Wellness (W): Select from current general education list

#### Cultural Diversity (D):

COMM 216	Intercultural Communication	3
----------	-----------------------------	---

#### Global Perspectives (G):

ECON 201	Principles of Microeconomics	3
----------	------------------------------	---

Total Credits		41
---------------	--	----

## Pre-pharmacy Major Requirements

General Education Requirements		40
--------------------------------	--	----

#### Pre-Pharmacy Requirements

BIOC 460	Foundations of Biochemistry and Molecular Biology I *	3
BIOC 461	Foundations of Biochemistry and Molecular Biology II	3
BIOL 150 & 150L	General Biology I and General Biology I Laboratory *	4
BIOL 220 & 220L	Human Anatomy and Physiology I and Human Anatomy and Physiology I Laboratory *	4
BIOL 221 & 221L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Laboratory	4
CHEM 122L	General Chemistry II Laboratory	1
CHEM 341	Organic Chemistry I *	3
CHEM 341L	Organic Chemistry I Laboratory	1
CHEM 342	Organic Chemistry II *	3
MICR 202 & 202L	Introductory Microbiology and Introductory Microbiology Lab *	3-5
or MICR 350 & 350L	General Microbiology and General Microbiology Lab	
MICR 460	Pathogenic Microbiology	3
STAT 330	Introductory Statistics *	3

Professional Years 1 & 2		72-76
--------------------------	--	-------

Total Credits		148-154
---------------	--	---------

\* Selected core courses will be used for selection criteria to determine GPA used in calculation for admission to the professional program. These courses must show evidence of letter grade, or other means of demonstrating acceptable competency (i.e. AP – CEEB) and MUST be completed by the end of fall semester prior to the December 31 deadline to apply to the pharmacy program. Remaining courses, which are required and listed in the pre-pharmacy curriculum, MUST be completed by the end of spring term. The only exception to this is that up to six credits of electives may be completed during the summer term.

<sup>1</sup> Students with composite ACT scores of 20 or lower must register for English 100 and 110 Fall Semester and take Engl 120 Spring Semester. Students who complete English 120 with a “C” or higher will receive credit for English 110 with a passing grade (P).

## Pre-Professional Requirements and Notes

- All courses listed for pre-pharmacy must be complete in order to apply for the professional program in the last spring semester in which pre-requisite courses are taken.

## Degree Requirements and Notes

- All required courses must be completed with a grade of ‘C’ or above.
- All students must maintain a semester GPA of 2.0 or above for each semester in the College. A student who fails to meet this standard for two successive or three non-successive semesters may be terminated from enrollment in the College of PNAS.

**NOTE: Student admitted to the Pharm.D. program will earn a Bachelor of Science Degree with a major in Pharmaceutical Science with successful completion of all courses through the second year of the professional Pharm.D. program.**

## Major Requirements

### Major: Doctor of Pharmacy

Degree Type: Pharm.D.

Required Degree Credits to Graduate: 142

## Professional Pharm.D. Requirements

The following professional Pharm.D. requirements that follow may be subject to change. Students should follow the curricula developed by the department and any changes that occur during the professional program will be communicated to the student by the department.

### P1 First Year Professional

MICR 470	Basic Immunology	3
PSCI 368	Pharmaceutics I	3
PSCI 369	Pharmaceutics II	2
PSCI 410	Pharmaceutical Biotechnology	2
PSCI 411	Principles of Pharmacokinetics and Pharmacodynamics	3
PSCI 412	Chemotherapeutic/Infectious Disease Pharmacodynamics	3
PSCI 470	Pharmaceutics III:Pharmacokinetics	3
PHRM 340	Pathophysiology I	4
PHRM 341	Pathophysiology II	4
PHRM 350	Introduction to Pharmacy Practice	2
PHRM 351	Pharmaceutical Care I	1
PHRM 351L	Pharmaceutical Care Laboratory I	1

PHRM 352	Introduction to Health Care Systems	2
PHRM 355	Introductory Pharmacy Practice Experience I: Introduction to Institutional Pharmacy Practice	3

### P2 Second Year Professional

PSCI 413	Endocrine/Respiratory/GI Pharmacodynamics	3
PSCI 414	Cardiovascular Pharmacodynamics	3
PSCI 415	Neuropsychiatry Pharmacodynamics	3
PSCI 417	Pharmacogenomics	2
PHRM 450	Self Care	3
PHRM 452	Pharmaceutical Care II	1
PHRM 452L	Pharmaceutical Care Laboratory II	1
PHRM 455	Introductory Pharmacy Practice Experience II: Introduction to Community Based Patient Care	3
PHRM 480	Drug Literature Evaluation	3
PHRM 499	Special Topics	1-5
PHRM 532	Infectious Disease	3
PHRM 534	Rheumatology/Endocrinology/Gastrointestinal	3
PHRM 535	PTDI:Neoplastic Diseases	3
PHRM 538	PTDI: Cardiovascular and Pulmonary Diseases	4

### P3 Third Year Professional

PHRM 475	Pharmacy Practice Management	3
PHRM 520	Special Populations	3
PHRM 536	Neurology & Psychiatry	3
PHRM 537	Renal Disease/Fluid and Electrolytes	3
PHRM 540	Public Health for Pharmacists	3
PHRM 551	Pharmaceutical Care III	1
PHRM 551L	Pharmaceutical Care Laboratory III	1
PHRM 552	Pharmaceutical Care IV	1
PHRM 552L	Pharmaceutical Care Laboratory IV/Introductory Pharmacy Practice Experience IV	1
PHRM 555	Introductory Pharmacy Practice Experience III	1
PHRM 560	Specialty Care Topics	2
PHRM 570	Pharmacy Practice Improvement and Project Management	3
PHRM 572	Pharmacy Law	2
PHRM 580	Pharmacotherapy Capstone	3

### P4 Fourth Year Professional

PHRM 581	Advanced Pharmacy Practice Experience I	9
PHRM 582	Advanced Pharmacy Practice Experience II	16
PHRM 583	Advanced Pharmacy Practice Experience III	15

Total Credits 142-146

- To apply to the professional entry-level pharmacy program at NDSU, an application must be submitted on-line to the Dean's Office, Sudro 123, by December 31. A cumulative grade point average of 3.0 or above is required before an applicant will be evaluated. Online application should be available the first week of November.
- The deadline to apply to the pharmacy program is December 31, 2014.
- PCAT: We do require the PCAT (Pharmacy College Admission Test). The College requires that students take the July, September, October, or November 2014 PCAT for students applying for 2015. We will accept PCAT scores from exams taken beginning with June of 2011 (not before). If you are interested in taking a practice test, Test Prep Review is a free service of a nonprofit group of educators.

Their website was created to provide free practice test questions for students in a variety of career situations.

- Students not previously enrolled at NDSU must apply both to NDSU and to the College of Pharmacy, Nursing, and Allied Sciences. For an NDSU application, contact the Office of Admissions at 701-231-8643. For International students, contact the Office of International Programs at 701-231-7895.

More information can be found on the college website ([http://www.ndsu.edu/pharmacy/prospective\\_students](http://www.ndsu.edu/pharmacy/prospective_students)) .