

# DOCTOR OF PHILOSOPHY IN NATURAL SCIENCES: PHARMACEUTICAL SCIENCE

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## Student Learning Outcomes

Students graduating from this program will:

- Demonstrate a thorough degree of knowledge in the disciplines
- Demonstrate an ability to use proper investigation techniques for the disciplines
- Use oral and written forms of communication to convey their ideas

## Program Structure

**Total Credits Required for Graduation:** 42\*

**Residency requirements:** Ph.D. students must satisfy the doctoral residency requirement by satisfactory completion of at least 18 credits in no more than 24 consecutive months. When satisfying the residency requirement, all Ph.D. students are subject to the following restrictions:

- The doctoral residency requirement must be satisfied no later than the end of the semester in which the student completes his or her comprehensive examinations.
- Students must achieve a cumulative graduate grade-point average of at least 3.0 in all courses counted toward satisfying the residency requirement.

\* *Specific disciplines may require more credit hours for graduation. See discipline specific coursework requirements for more information on total credit hours required for graduation.*

## Program Requirements

The coursework requirements encompass:

- A minimum of 12 credit hours of coursework within the primary area, accompanied by at least 12 dissertation hours. The primary disciplines retain the flexibility to potentially request more than the minimum credit hours.
- A minimum of 9 credit hours within a secondary discipline area, with the secondary discipline also having the option to specify additional credit hours beyond the minimum.
- A minimum of 30 classroom credits is required beyond the baccalaureate, including fundamental and advanced courses along with seminars.
- Any primary area discipline can be combined with any secondary area discipline.

## Participating Disciplines

Participating disciplines encompass a range of fields, including:

- Biomedical and Health Informatics
- Cell Biology and Biophysics
- Chemistry
- Geosciences
- Mathematics
- Molecular Biology and Biochemistry
- Oral and Craniofacial Sciences
- Pharmaceutical Science
- Pharmacology
- Physics

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## Pharmaceutical Science

### Primary Discipline Program Requirements

Code	Title	Credits
A minimum of 12 credit hours of coursework within the primary area, at least one 3-hour statistics course, 6 hours of electives, 3 hours of the divisional seminar course, and at least 12 dissertation hours.		
Pharmaceutical Science Courses:		12
Statistics course		3
Electives		6
PHARM 5580A	Seminar in Pharmaceutical Sciences (One-hour course taken three times)	3
Secondary discipline coursework		9
Dissertation		12

**Total Credit Hours: 45**

### Secondary Discipline Program Requirements

Code	Title	Credits
A minimum of 9 credit hours, selected from the list below.		
PHARM 5521	Advanced Organic Medicinal Chemistry	9
PHARM 5527	Analytical Methods	
PHARM 5533	Advanced Pharmacokinetics and Biopharmaceutics	
PHARM 5588	Biotechnology	
PHARM 5605	Fundamentals of Pharmaceutical Sciences	
PHARM 5631	Pharmaceutical Formulations I	
PHARM 5632	Novel Drug Delivery Systems	
PHARM 5634	Protein and Nucleic Acid Drug Delivery	

### Admission Requirements

Applicants must hold a professional degree in pharmacy (Pharm.D. or B.S.) or a baccalaureate degree in a related field such as chemistry, biology or biomedical engineering with an undergraduate GPA of at least 3.0 on a 4.0 scale. Students who hold a master's degree in an appropriate discipline may be admitted on satisfaction of the general requirements of the School of Graduate Studies. Application deadlines are October 1st for the spring semester and February 1st for the fall semester.

## Other Discipline-Specific Special Requirements

### Requirements for Retention

Students who receive two C grades or one D grade in didactic courses are subject to dismissal from the program. A student who receives one F grade will not be retained. Students will not be allowed to attain more than one C grade in a co-discipline course.

### Appeals

Appeals by graduate students on matters pertaining to research or studies in the discipline will be routed initially to the supervisory committee and managed according to the appropriate procedures established within the School of Pharmacy.

## Comprehensive Examination Guidelines

Ph.D. students who choose Pharmaceutical Science as the primary discipline must successfully pass comprehensive oral and written examinations given by the Supervisory Committee by the end of the third year. The Comprehensive Examinations will be given after the student has completed the majority of didactic coursework requirements but not later than the end of the third year. The Comprehensive Examinations (written and oral) must be passed before a doctoral student can be admitted to candidacy.