

DOCTOR OF PHILOSOPHY IN NATURAL SCIENCES: PHARMACOLOGY

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

Student Learning Outcomes

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Pharmacology

Primary Discipline Program Requirements

Code	Title	Credits
A minimum of 25 credit hours of coursework within the primary area, as described below, with at least 12 dissertation hours. Specific course requirements will be determined by the student in consultation with the research advisor and the supervisory committee.		
Pharmacology Required Coursework:		
PHARM 5519	Pharmacology I	2
PHARM 5520	Pharmacology II	4
PHARM 5530	Pharmacology III	4
PHARM 5509	Toxicology	3
PHARM 5615	Methods In Pharmacology And Toxicology	3
PHARM 5580 - Seminar course of any iteration		3
EDUC-R&P 5505	Statistical Methods I	3
Advanced Courses (5500-level or above) *		3
Dissertation		12

* Pharmacology or related areas as approved by the supervisory committee.

Total Credit Hours: 46

Secondary Discipline Program Requirements

Code	Title	Credits
A minimum of 9 credit hours in Pharmacy, including the courses listed below:		9
PHARM 5519	Pharmacology I	2
PHARM 5520	Pharmacology II	4
PHARM 5580C	Seminar in Pharmacology/Toxicology	1
Elective		2+

Admission Requirements

Due to course sequencing, new students will ordinarily be accepted only in the fall term. Applicants must hold a professional degree in pharmacy (Pharm.D. or B.S.) or a baccalaureate degree in biological, chemical science or health science. In special situations, baccalaureate degrees in other disciplines will be evaluated for possible admission. For graduates of foreign schools, the applicant must have completed a course of study at least the equivalent of a U.S. baccalaureate degree.

Prospective students must have an aggregate minimum grade-point average of 3.0 on a 4.0 scale for all college work taken prior to the bachelor's degree, or an aggregate GPA of at least 3.5 on all post-baccalaureate work to date (minimum of nine hours). For graduates of foreign schools, the applicant must have above-average grades in previous college study. The GRE is optional, however, we request that prospective students who submit their scores should have a minimum aggregate GRE score of 295 for verbal and quantitative and 3.5 out of 6.0 for analytical writing.

For graduates of foreign schools, the applicant must have a minimum score of 550 on written or 213 computer-based or 79 on Internet-based TOEFL exam or alternatively, a minimum score of 6 on the IELTS.

Other Discipline-Specific Special Requirements

Additional Coursework

Students will be expected to complete at least three credit hours of statistics. Students are expected to take sufficient computer courses or training as to be proficient in word processing and the use of spread sheets and data bases.

Retention in Program

Graduate students are required to maintain a cumulative grade-point average of B (3.0 on a 4.0 scale). In any semester when the cumulative GPA falls below 3.0, the graduate student will automatically be placed on probation. The student is allowed one semester to return to good academic standing (cumulative GPA of 3.0). A graduate student should not let the cumulative GPA fall below 3.0 in two semesters throughout the entire program. Students who receive a grade of C in six credit hours or more, or who receive a grade lower than C, or one no-credit grade will be dismissed from the graduate school. Any C grade in courses offered by the Pharmacology division should be repeated no more than once.

Appeals

For special requests or disputes concerning a student's Ph.D. program, written appeals with documentation must first be submitted to the student's supervisory committee. If a resolution of the problem cannot be obtained at the supervisory committee level, the written appeals process must then progress through the following levels:

1. Division Chair, Pharmacology.
2. Graduate Programs Committee, School of Pharmacy.
3. Ph.D. Program Director.
4. Dean, School of Graduate Studies.

Comprehensive Examination Guidelines

The graduate school requires that a student demonstrate adequate intellectual mastery of the field of specialization and of appropriate co-discipline fields by passing a Comprehensive Examination before being admitted into candidacy for the Ph.D. degree. To satisfy this requirement the student must pass two parts of the Comprehensive Examination given by the supervisory committee.

The Comprehensive Examination must be taken before the beginning of the student's third year after admission to full-time graduate study at UMKC. The Comprehensive Examination consists of both written and oral components. The format of the Comprehensive Examination consists of the writing and oral defense of a research proposal in the style of an NIH grant. This topic of the proposal is in an area distinct from the student's intended dissertation project and approved by the committee in advance of the examination.

Written Examination

The written examination will consist of a National Institutes of Health (NIH) grant proposal including Specific Aims, Methods, and Research Design sections; budget pages are unnecessary. The content will integrate fundamental knowledge from applicable disciplines. The written proposal must be submitted to the supervisory committee at least two weeks in advance of the oral portion of the examination.

Oral Examination

The oral examination shall consist of the student's presentation of their grant to the supervisory committee in order that the committee can evaluate the student's critical thought process and the student's ability to develop and defend an original research proposal. The oral examination includes (1) questions covering the grant proposal prepared by the student for the written examination and (2) other related material in the student's area of specialization, including fundamental knowledge of the primary discipline and co-discipline(s).

On satisfactory completion of the written and oral portions of the Comprehensive Examination, the student becomes a candidate for the Ph.D. In the event a student does not pass the examination, one additional attempt may be made at a date no sooner than 12 weeks, and within one year, of the original attempt. A student who fails either the written or the oral examination a second time will be automatically dropped from the program.

A student must pass the doctoral Comprehensive Examination and advance to Ph.D. candidacy within four years from the beginning of doctoral coursework (within three years if entering with a master's degree in the same or closely related field). After the establishment of degree candidacy, a maximum of four years will be allowed for completion of degree requirements (three years for students with a master's degree). Failure to complete the work within the periods specified will necessitate re-evaluation of the entire program and may result in a notice of termination.