

DOCTOR OF PHILOSOPHY IN NATURAL SCIENCES: CELL BIOLOGY AND BIOPHYSICS

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

Students graduating from this program will:

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

Cell Biology and Biophysics

The discipline requires 33 credit hours of courses (23 primary and 10 secondary) and 15 credit hours of dissertation research for a total of 48 credit hours of post-baccalaureate credits, distributed as indicated below. The core courses should be completed by the end of the second academic year after admission to the graduate program on a full-time basis (individual arrangements will be made for part-time students).

Primary Discipline Program Requirements

Code	Title	Credits
A minimum of 23 credit hours of coursework within primary area and 15 dissertation hours.		
Primary Coursework:		
LS-CBB 5530	Cell and Molecular Biology I	3
LS-CBB 5520	Cell and Molecular Biology II	3
LS-CBB 5596	Advanced Experimental Cell Biology I	2
or LS-CBB 5597	Advanced Experimental Cell Biology II	
LS-CBB 5612	Seminar in Cell Biology and Biophysics	1
LS-CBB 5612	Seminar in Cell Biology and Biophysics	1
LS-CBB 5690	Analytical Methods in Cell Biology and Biophysics	5-8
BIOLOGY 5501	Proposal Writing	1
Electives		3-7
Dissertation		15

Total Credit Hours: 48 - This includes 23 primary discipline hours, 10 hours in a secondary discipline, and 15 dissertation hours.

Secondary Discipline Program Requirements

Code	Title	Credits
A minimum of 10 credit hours within secondary discipline area.		10
LS-CBB 5520	Cell and Molecular Biology II	3
LS-CBB 5530	Cell and Molecular Biology I	3
LS-CBB 5612	Seminar in Cell Biology and Biophysics	1
Electives - at least 3 hours		3

Admission Requirements

A cumulative GPA of at least 3.0 (on a 4.0 scale) on all college work for bachelor's degree or post-baccalaureate work. Due to the sequencing of coursework, new students selecting cell biology and biophysics as their primary discipline will normally only be admitted in the fall term.

Qualifying Requirements for Full Admission

Minimum of 16 hours of approved graduate coursework at UMKC toward the Ph.D. program with a grade-point average of at least 3.0 on a 4.0 scale. International students must establish English proficiency.

Requirements for Comprehensive Exams

Full-time students with cell biology as their primary discipline must take their comprehensive examination before the beginning of the third academic year after admission to Ph.D. study. Part-time Ph.D. students in this discipline must complete their comprehensive examination immediately after completion of the 25-hour course requirement on their Ph.D. plan of study.

Format

For students with this discipline as their primary discipline, written and oral examinations are required.

Written Portion

The written examination, for students who have cell biology and biophysics as their primary discipline consists of an NIH-style grant proposal that the student will prepare. The topic of the research proposal will be determined by the student in consultation with the student's supervisory committee.

Oral Portion

The oral examination has two aspects: (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 student's chosen disciplines.

Other Discipline-Specific Special Requirements

Students with this discipline as a primary discipline must participate in the teaching program of the Division of Biological and Biomedical Systems and must participate in seminars.

Retention in Program

No more than one C grade will be permitted in basic core coursework. If a student with this discipline as the primary discipline receives more than one C grade in a basic course, he or she will be dropped from the doctoral program.

The doctoral faculty in Cell Biology and Biophysics meets formally at the end of each academic year to discuss and evaluate all graduate students' progress. Each student's committee also meets with the student at least once a year. After the annual doctoral faculty meeting, each student receives a written evaluation of his or her status and a report is placed in the student's file.