DOCTOR OF PHILOSOPHY IN NATURAL SCIENCES: CELL BIOLOGY AND BIOPHYSICS

As part of the Natural Sciences Ph.D. program, students in a primary discipline of Cell Biology and Biophysics must meet the minimum Ph.D. program requirements. These can be found within the main program page (https://catalog.umkc.edu/colleges-schools/graduate-studies/phd-programs/) and subsequent requirement pages.

Cell Biology and Biophysics

Please see the School of Graduate Studies web page (https://sgs.umkc.edu/academics/nat-sci-coordinators.html) for the contact information for the discipline Coordinator. To view all doctoral and graduate faculty in Cell Biology and Biophysics, see this web page (https://sgs.umkc.edu/faculty-and-staff/doctoral-graduate-faculty-lists.html).

Admission Requirements

Applicants must meet both the general and the discipline-specific criteria for admission and be recommended for admission by the faculty review group. Upon approval by the graduate dean, students are admitted to the School of Graduate Studies.

Please see the website (https://sgs.umkc.edu/admissions/natural-sciences-apply.html) for updated application deadlines.

A cumulative GPA of at least 3.0 (on a 4.0 scale) is required on all college work for bachelor's degree or post-baccalaureate work. New students selecting Cell Biology and Biophysics as their primary discipline will normally 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 GPA of at least 3.0 on a 4.0 scale. International students must establish English proficiency.

Core Program Requirements

Students with a Cell Biology and Biophysics primary discipline will complete a minimum of 48 credit hours for the degree. This includes at least 12 hours in the primary discipline, 9 hours outside the primary discipline, 12 hours of additional electives, and at least 15 hours of dissertation credit in the primary discipline.

At least 23 credit hours, including 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 arrangement will be made for part-time students.

Primary Discipline Program Requirements

Code	Title	Credits
12 hours in the primary discipline, 9 hours outside the primary discipline, 12 hours of additional electives, and 15 dissertation hours.		
Primary Coursework:		12
LS-CBB 5597	Advanced Experimental Cell Biology II	
LS-CBB 5612	Seminar in Cell Biology and Biophysics	
LS-CBB 5690	Analytical Methods in Cell Biology and Biophysics	
BIOLOGY 5501	Proposal Writing	
Electives* (4 hours, see the list below of suggested courses)		
Coursework Outside of Primary Discipline		9
LS-MBB 5596	Advanced Experimental Molecular Biology I	
LS-MBB 5611	Seminar in Molecular Biology and Biochemistry	
Electives* (6 hours, see the list below of suggested courses)		
Additional electives		12
Dissertation		15
Total Credits		**48**

Total Credit Hours: 48

*Suggested elective courses for primary and outside-the-primary discipline coursework

Code	Title	Credits
LS-CBB 5520	Advanced Principles of Cell Biology	3
LS-CBB 5523	Advanced Principles of Genetics	3
LS-MBB 5530	Advanced Principles of Molecular Biology	3

LS-MBB 5561	Advanced Principles of Biochemistry	3
BIOLOGY 5514	Graduate Biostatistics 1	3
BIOLOGY 5525	Bioinformatics and Data Analysis	3

Secondary Discipline Program Requirements

Students with a Cell Biology and Biophysics as a secondary discipline will complete a minimum of 10 credit hours in the discipline.

Code	Title	Credits
A minimum of 10 credit hours within secondary discipline area.		
LS-CBB 5520	Advanced Principles of Cell Biology	3
LS-CBB 5523	Advanced Principles of Genetics	3
LS-CBB 5612	Seminar in Cell Biology and Biophysics	1
Electives - at least 3 hours		3
Total Credits		**10**

Other Discipline-Specific Special Requirements

Research

The Division of Biological and Biomedical Systems offers research opportunities in many areas of modern life sciences that address problems of basic life processes at the cellular, subcellular and molecular levels. Graduate studies offered with primary participation of the faculty in the Division of Cell Biology and Biophysics are based on the belief that training for research can be best accomplished by having an appropriate breadth of background coursework, combined with a depth of specialization in a particular research area. The faculty have established guidelines that have a minimum of formal requirements so that students have the flexibility to advance at a pace consistent with development of the individual. Diligence, creativity and independent thinking are the qualities desired in the candidate's dissertation work.

Teaching

As part of their graduate training, all Ph.D. students with Cell Biology and Biophysics as the primary discipline participate in the teaching program of the Division of Biological and Biomedical systems. This is an important component of preparation for a career in academia or other institutions and aids in the development of effective communication skills.

Course Restrictions

5700-level courses may not be used to satisfy Cell Biology and Biophysics discipline-specific course requirements.

Retention in the Program

For students with this discipline as their primary discipline, no more than one C grade in a core course, and no D or F grades, are permitted. A student who receives more than one C grade will be recommended for termination from the doctoral program. A student who receives a D or F grade will be dropped from the program.

Each student must assemble a supervisory committee that is required to meet with the student at least once a year. The committee consists of at least three doctoral faculty chosen by the student in addition to the research mentor. After this yearly meeting, each student receives a written evaluation of his or her status and a report is placed in the student's file.

Comprehensive Examinations

To advance to Ph.D. candidacy, the student must pass a Comprehensive Exam. Full-time students with Cell Biology and Biophysics 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 primary discipline must complete their comprehensive examination immediately after completion of the 23-hour course requirement on their Ph.D. plan of study. This exam will be administered by the student's supervisory committee and will test the student's knowledge of background material, as well as the student's ability to analyze and interpret information and solve problems.

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 also 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 discipline(s).

Dissertation

Each student is required to write a dissertation to conclude the program of study in Cell Biology and Biophysics. The Plan of Study, including a description of the proposed thesis research, should be submitted to and approved by the supervisory committee prior to completion of the comprehensive exam. The student is required to submit all other dissertation forms required by the School of Graduate Studies (list of forms available here (https://sgs.umkc.edu/academics/nat-sci-forms.html)), and upon completion, to pass an oral defense of the dissertation.