

# BIOLOGICAL SCIENCES - CELL BIOLOGY AND MOLECULAR GENETICS - PH.D.

College of Arts and Sciences  
Department of Biological Sciences  
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## Description

The Ph.D. degree in Biological Sciences—Cell Biology and Molecular Genetics is an individualized program of study and research that prepares students for career opportunities in teaching and research in academic, governmental and industrial settings. A core series of courses sets a rigorous foundation in theory, experimental design and technical knowledge of contemporary investigations at the cellular level of organization. Areas of research include developmental biology, cellular and developmental neuroscience, immunology, reproductive biology, cellular endocrinology and molecular genetics.

## Fully Offered At:

- Kent Campus

## Admission Requirements

- Bachelor's degree or higher from an accredited college or university<sup>1</sup> for unconditional admission
- Minimum 3.000 GPA on a 4.000 point scale for unconditional admission
- Official transcript(s)
- GRE scores
- Goal statement
- Three letters of recommendation
- A list of up to five potential faculty advisors
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning one of the following:
  - Minimum 587 TOEFL PBT score (paper-based version)
  - Minimum 94 TOEFL IBT score (Internet-based version)
  - Minimum 82 MELAB score
  - Minimum 7.0 IELTS score
  - Minimum 65 PTE score

Before admission can be completed, a prospective student must be accepted by a faculty member in the program who will act as advisor. For more information about graduate admissions, please visit the Graduate Studies admission website. For more information on international admission, visit the Office of Global Education's admission website.

- <sup>1</sup> Applicants should have a bachelor's degree, or higher, in the natural sciences, with a minimum of two years of chemistry, one year of calculus, one year of physics and two years of biology, including genetics, plant or animal physiology and morphology. Student deficiencies in these areas at the time of admission shall be rectified during the first year of graduate study.

## Program Learning Outcomes

Graduates of this program will be able to:

1. Understand advanced biological concepts beyond the scope of the typical undergraduate degree and to increase the depth of their knowledge through coursework and hands-on experiences.
2. Apply scientific principles and appreciate work outside of their particular field.
3. Effectively communicate about science with colleagues as well as those outside of the student's area of expertise.
4. Develop the necessary laboratory skills that will allow testing of hypotheses.

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements</b>		
BSCI 70103	BIOLOGICAL STATISTICS <sup>1</sup>	3
BSCI 70142	BIOENERGETICS <sup>1</sup>	3
BSCI 70143	EUKARYOTIC CELL BIOLOGY	3
BSCI 70144	SELECTED READINGS IN EUKARYOTIC CELL BIOLOGY	1
BSCI 70184	RESPONSIBLE CONDUCT IN RESEARCH AND TEACHING-BIOLOGICAL SCIENCES <sup>2</sup>	2
BSCI 70491	SEMINAR IN PHYSIOLOGY (repeated each semester until candidacy)	3-6
BSCI 80199	DISSERTATION I <sup>3</sup>	30
Major Electives <sup>4</sup>		42-45
Student Seminar Presentation <sup>5</sup>		
<b>Minimum Total Credit Hours for Post-Baccalaureate Students</b>		90
<b>Minimum Total Credit Hours for Post-Master's Students</b>		60

- <sup>1</sup> Students may substitute a different graduate-level statistics or biochemistry course for BSCI 70103 or BSCI 70142, respectively, if deemed appropriate by the students' advisor/guidance committee.
- <sup>2</sup> Students are required to take BSCI 70184 their first semester (or the following fall semester for those starting their studies in the spring semester).
- <sup>3</sup> Doctoral candidates, upon admission to candidacy, must register for BSCI 80199 for a total of 30 hours. It is expected that doctoral candidates will continuously register for BSCI 80199, and thereafter BSCI 80299, each semester, including one term each summer, until all requirements for the degree have been met. It is expected that candidates will present the results of their research in a defense open to students and faculty, at which the dissertation will be presented and defended before the dissertation committee, with not more than one negative vote, in order to be recommended to the Department of Biological Sciences and the College of Arts and Sciences for degree conferral.

- <sup>4</sup> Students are to select courses in consultation with their academic faculty advisor. It is recommended that students enroll in BSCI 70195 for selected current topics. Additional coursework should provide the necessary skills and/or knowledge base to aid in the completion of the student's research project and be beneficial for their professional development.
- <sup>5</sup> Students are required to present at least one departmental seminar about their work.

## Candidacy for the Degree

Following completion of the candidacy exam, doctoral students must successfully prepare, present and defend a formal prospectus of the research project before the dissertation committee.

**Candidacy Exams:** The student is admitted to doctoral candidacy following successful completion of both written and oral candidacy examinations. These exams are based on prior coursework and coursework taken in this graduate program as determined by the student's academic Guidance Committee, which must consist of at least three eligible faculty members. The advisor(s) and a majority of members of the Guidance Committee must be members of the appropriate graduate program. This committee is responsible for determining the student's academic curriculum and for administering the candidacy exams. Following successful completion of candidacy exams, the student registers for dissertation - BSCI 80199 for two semesters and, thereafter, for BSCI 80299 continually until complete.

**Prospectus:** Following completion of the candidacy exam, the doctoral student must successfully prepare, present and defend a formal prospectus of the research project before his or her dissertation committee.

**Dissertation and Final Defense:** The doctoral candidate must complete a dissertation. It is expected that the candidate will present the results of her or his research in a defense open to students and faculty, at which the dissertation will be presented and defended before the dissertation committee, with not more than one negative vote, in order to be recommended to the department and College of Arts and Sciences for degree conferral.

## Graduation Requirement

Students must complete a minimum 20 credit hours of graded (A-F) courses toward their degree.