

# BIOLOGICAL SCIENCES - INTEGRATIVE PHYSIOLOGY AND NEUROBIOLOGY - PH.D.

College of Arts and Sciences  
Department of Biological Sciences  
[www.kent.edu/biology/graduate](http://www.kent.edu/biology/graduate)

## Examples of Possible Careers\*

### Biological scientists, all other

- 2.2% slower than the average
- 44,700 number of jobs
- \$85,290 potential earnings

### Biological science teachers, postsecondary

- 9.3% much faster than the average
- 64,700 number of jobs
- \$85,600 potential earnings

### Medical scientists, except epidemiologists

- 6.1% faster than the average
- 138,300 number of jobs
- \$91,510 potential earnings

## Contact Information

- Program Coordinator: **Heather Caldwell** | [bscigrad@kent.edu](mailto:bscigrad@kent.edu) | 330-672-3636
- Chat with an Admissions Counselor

## Fully Offered

- **Delivery:**
  - In person
- **Location:**
  - Kent Campus

## Admission Terms

- Fall

### \*Note

Source of occupation titles and labor data is from the U.S. Bureau of Labor Statistics'

Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

## Description

The Ph.D. degree in Biological Sciences–Integrative Physiology and Neurobiology is the study of a broad range of topics, including endocrinology, neuroscience, immunology, reproductive biology and other regulatory systems. Students have access to resources for physiological research, including a vivarium, tissue culture facility,

confocal microscope/visualization facility, laser capture microscope, genomics and proteomics facilities.

## Admission Requirements

- Bachelor's degree or higher from an accredited college or university in the natural sciences
- Strong background in biology and related subjects such as chemistry and mathematics<sup>1</sup>
- Minimum 2.750 GPA on a 4.000-point scale
- Official transcript(s) - copies of official transcripts can be submitted for initial review of application
- GRE scores (*effective for spring 2023 admissions, the GRE will no longer be required*)
- Résumé or curriculum vitae
- Personal statement that clearly explains why the applicant wishes to pursue an advanced degree and describes research experience and interest; statement must include a list of potential faculty mentors
- Three letters of recommendation that comment on chance of success in an advanced degree program, with minimum least from someone who can comment on research aptitude
- 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
  - Minimum 120 Duolingo English test score

For more information about graduate admissions, visit the graduate admission website. For more information on international admission, visit the Office of Global Education's admission website.

<sup>1</sup> 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 70104	BIOLOGICAL STATISTICS <sup>1</sup>	4

BSCI 70184	RESPONSIBLE CONDUCT IN RESEARCH AND TEACHING-BIOLOGICAL SCIENCES <sup>2</sup>	2
BSCI 70191	SEMINAR IN BIOLOGY (repeated each semester until candidacy)	3-6
Additional Electives <sup>3</sup>		18-21
Student Seminar Presentation <sup>4</sup>		
<i>Culminating Requirement</i>		
BSCI 80199	DISSERTATION I <sup>5</sup>	30
<b>Minimum Total Credit Hours for Post-Baccalaureate Students</b>		<b>90</b>
<b>Minimum Total Credit Hours for Post-Master's Students</b>		<b>60</b>

<sup>1</sup> Students may substitute a different graduate-level statistics course for BSCI 70104, 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, 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 70142 and 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.

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 entering the program with a bachelor's degree must complete a minimum 20 credit hours of graduate courses beyond BSCI 80198 toward their degree. Students entering the program with a master's degree should consult with their guidance committee to determine how many courses are required.

## Candidacy for the Degree

After completing the required coursework, students complete the doctoral program by being admitted to candidacy, by proposing a research project to the faculty, and by completing and defending that research with a written dissertation before a faculty 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