BIOLOGY - M.A.

College of Arts and Sciences
Department of Biological Sciences
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 technicians
- 4.9% about as fast as the average
- 87,500 number of jobs
- $46,340 potential earnings

Food scientists and technologists
- 4.4% about as fast as the average
- 14,200 number of jobs
- $73,450 potential earnings

Secondary school teachers, except special and career/technical education
- 3.8% about as fast as the average
- 1,050,800 number of jobs
- $62,870 potential earnings

Contact Information
- Program Coordinator: Heather Caldwell | bscigrad@kent.edu | 330-672-3636
- Chat with an Admissions Counselor

Fully Offered
- Delivery: In person
- Location: Kent Campus

Admission Terms
- Fall
- Spring
- Summer

*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 Master of Arts degree in Biology is for students wishing to gain additional knowledge in any area of the biological sciences. This is a non-thesis master's degree designed for secondary school science teachers, individuals looking for additional background or preparation for professional school (e.g. medicine, dentistry or Ph.D. programs) and those seeking employment in life science industries in a non-research capacity.

The Biology major includes the following optional concentrations:

- The Biological Data Analytics concentration combines required courses in data analytics and elective options in biology to provide students with the understanding of the type of data collected while conducting biological research and how to analyze it.
- The Cellular and Molecular Biology concentration provides a heavy focus on cell-to-cell interactions and signaling pathways to give students a deep understanding of the cellular and molecular processes that occur within cells and physiological systems.
- The Environmental Biology concentration provides students with a balance between better understanding the relationships between organisms and the environment and how this balance can be sustained through environmental management and conservation.
- The Medical Biology concentration provides students with a deep understanding of physiological systems and the mechanisms that underlie various disorders and disease pathologies.

Students who declare the Biology major with no concentration will select their area of specialization in consultation with an academic faculty advisor.

Admission Requirements

- Bachelor’s degree from an accredited college or university
- Minimum 2.750 undergraduate GPA on a 4.000-point scale
- Official transcript(s) - copies of official transcripts can be used for initial application
- Goal statement
- One letter of recommendation
- 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.

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BSCI 60104</td>
<td>BIOLOGICAL STATISTICS</td>
<td>4</td>
</tr>
<tr>
<td>BSCI 60110</td>
<td>CAREERS AND PROFESSIONAL SKILLS FOR BIOLOGISTS</td>
<td>2</td>
</tr>
<tr>
<td>BSCI 60184</td>
<td>RESPONSIBLE CONDUCT IN RESEARCH AND TEACHING-BIOLOGICAL SCIENCES</td>
<td>2</td>
</tr>
<tr>
<td>BSCI 60191</td>
<td>SEMINAR IN BIOLOGY (repeated for 2 credit hours total)</td>
<td>2</td>
</tr>
<tr>
<td>BSCI 60196</td>
<td>INDIVIDUAL INVESTIGATION</td>
<td>6</td>
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Additional Requirements or Concentration

Choose from the following: 15

- Additional Requirements for Students Not Declaring a Concentration
- Biological Data Analytics Concentration
- Cellular and Molecular Biology Concentration
- Environmental Biology Concentration
- Medical Biology Concentration

Minimum Total Credit Hours: 31

1 Students must enroll for 1-3 credit hours of BSCI 60196 each semester.
2 Students must enroll for 1 credit hour of BSCI 60191 each semester.

Additional Requirements for Students Not Declaring a Concentration

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BSCI 50104</td>
<td>BIOENERGETICS</td>
<td>15-16</td>
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</table>

Students interested in cell-/molecular-/biomedical-/biotechnology-related areas are encouraged to choose from the following:

- BSCI 50141 | EXPERIMENTAL DESIGN AND ANALYSIS IN MOLECULAR BIOLOGY | 3            |
- BSCI 50143 | MOLECULAR BIOLOGY                            | 3            |
- BSCI 50148 | PRINCIPLES OF INFECTIOUS DISEASE             | 3            |
- BSCI 50150 | MOLECULAR MECHANISMS OF DISEASE: CANCER      | 3            |
- BSCI 50151 | MECHANISMS OF DISEASE: OBESITY AND RELATED METABOLIC DISEASE | 3            |
- BSCI 50152 | MOLECULAR MECHANISMS OF DISEASE: NEUROLOGICAL DISORDERS | 3            |
- BSCI 50154 | DIABETES AND CARDIOVASCULAR DISEASE          | 3            |

Minimum Total Credit Hours: 15
### Environmental Biology Concentration Requirements

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<tr>
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<tbody>
<tr>
<td>BSCI 50374</td>
<td>CONSERVATION BIOLOGY</td>
<td>4</td>
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<tr>
<td>or       BSCI 50375</td>
<td>ENVIRONMENTAL BIOLOGY AND MANAGEMENT</td>
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</tbody>
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Concentration Requirements, choose from the following: 11-12

- BSCI 50160  **MARINE BIOLOGY**
- BSCI 50162  **SOIL BIOLOGY**
- BSCI 50163  **EVOLUTION**
- BSCI 50170  **STREAM BIOLOGY**
- BSCI 50222  **INVASION BIOLOGY**
- BSCI 50363  **MICROBIAL ECOLOGY**
- BSCI 50364  **LIMNOLOGY**
- BSCI 50365  **FIELD METHODS IN ORNITHOLOGY**
- BSCI 50368  **WETLAND ECOLOGY AND MANAGEMENT**
- BSCI 50374  **CONSERVATION BIOLOGY**
- BSCI 50375  **ENVIRONMENTAL BIOLOGY AND MANAGEMENT**
- BSCI 50376  **TROPICAL FIELD BIOLOGY AND CONSERVATION**
- BSCI 50380  **BIOGEOCHEMISTRY**
- BSCI 50556  **VERTEBRATE ZOOLOGY**
- BSCI 60370  **ECOLOGICAL AND EVOLUTIONARY GENETICS**
- BSCI 60371  **EVOLUTIONARY BIOLOGY**
- BSCI 60372  **COMMUNITIES AND ECOSYSTEMS**
- BSCI 60373  **POPULATION AND COMMUNITY ECOLOGY**
- ESCI 53042  **ENVIRONMENTAL GEOCHEMISTRY**
- GEOG 51077  **WATER AND SOCIETY**
- GEOG 56080  **URBAN SUSTAINABILITY**
- GEOG 59070  **GEOGRAPHIC INFORMATION SCIENCE**
- GEOG 59230  **REMOTE SENSING**
- or ESCI 52030  **REMOTE SENSING**

Minimum Total Credit Hours: 15

### Medical Biology Concentration Requirements

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<tr>
<td></td>
<td><strong>Concentration Requirements</strong></td>
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<tr>
<td></td>
<td>Medical Biology Electives, choose from the following: 6</td>
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<tr>
<td>BSCI 50148</td>
<td>PRINCIPLES OF INFECTIOUS DISEASE</td>
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<td>BSCI 50154</td>
<td>DIABETES AND CARDIOVASCULAR DISEASE</td>
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<tr>
<td>BSCI 50460</td>
<td>ADVANCED HUMAN PHYSIOLOGY</td>
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Concentration Electives, choose from the following: 9-10

- BSCI 50143  **EUkARYOTIC CELL BIOLOGY**

Minimum Total Credit Hours: 15

### Graduation Requirements

Students must complete a minimum of 23 credit hours of biological science (BSCI) courses toward the degree with one exception: Teachers holding or pursuing K-12 licensure who do not declare a concentration may complete a minimum 18 credit hours of biological sciences (BSCI) courses toward the degree.

The Department of Biological Sciences frequently offers special topics classes in specialized areas of interest, which can count towards the degree when approved to be part of a student’s program of study. Coursework in other fields within the natural and physical sciences may be used to meet credit hour requirements when approved to be part of the student’s program of study.