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: John Johnson | bscigrad@kent.edu | 330-672-3849
- Chat with an Admissions Counselor

Fully Offered
- Kent Campus

Admission Requirements
- Bachelor's degree from an accredited college or university for unconditional admission
- Minimum 3.000 undergraduate GPA on a 4.000 point scale for unconditional admission
- Official transcript(s)
- Goal statement
- Three letters 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, please visit the Graduate Studies 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>
</tr>
</thead>
<tbody>
<tr>
<td>BSCI 50196</td>
<td>INDIVIDUAL INVESTIGATION (repeated for 6 credit hours total)</td>
<td>6</td>
</tr>
<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>
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</table>

**Additional Requirements for Students Not Declaring a 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 50196 each semester.

2 Students must enroll for 1 credit hour of BSCI 60191 each semester.

**Biological Data Analytics Concentration Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BSCI 50218</td>
<td>INTRODUCTION TO GENOMICS</td>
<td>3-4</td>
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<tr>
<td>or BSCI 50220</td>
<td>BIOINFORMATICS</td>
<td></td>
</tr>
<tr>
<td>or BSCI 60107</td>
<td>REPRODUCIBLE QUANTITATIVE METHODS FOR ECOLOGICAL DATA</td>
<td></td>
</tr>
</tbody>
</table>

Concentration Electives, choose from the following: 12-13

- BSCI 50141 | EXPERIMENTAL DESIGN AND ANALYSIS IN MOLECULAR BIOLOGY               |              |
- BSCI 50158 | MOLECULAR BIOLOGY                                                   |              |
- BSCI 50159 | MOLECULAR BIOLOGY LABORATORY                                        |              |
- BSCI 50218 | INTRODUCTION TO GENOMICS                                           |              |
- BSCI 50220 | BIOINFORMATICS                                                      |              |
- BSCI 50371 | EVOLUTIONARY BIOLOGY                                                |              |
- BSCI 50372 | COMMUNITIES AND ECOSYSTEMS                                          |              |
- BSCI 50373 | POPULATION AND COMMUNITY ECOLOGY                                    |              |
- BSCI 60107 | REPRODUCIBLE QUANTITATIVE METHODS FOR ECOLOGICAL DATA               |              |
- BSCI 60145 | MEDICAL GENOMICS                                                   |              |
- CS 54002 | MACHINE LEARNING AND DEEP LEARNING                                  |              |
- CS 63015 | DATA MINING TECHNIQUES                                              |              |
- CS 63016 | BIG DATA ANALYTICS                                                 |              |
- CS 63017 | BIG DATA MANAGEMENT                                                |              |
- CS 63018 | PROBABILISTIC DATA MANAGEMENT                                       |              |
- LIS 60010 | THE INFORMATION LANDSCAPE                                           |              |
- LIS 60030 | PEOPLE IN THE INFORMATION ECOLOGY                                   |              |

Minimum Total Credit Hours: 15

**Cellular and Molecular Biology Concentration Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSCI 50143</td>
<td>EUKARYOTIC CELL BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 50158</td>
<td>MOLECULAR BIOLOGY</td>
<td>3</td>
</tr>
</tbody>
</table>

Concentration Electives, choose from the following: 9-10

- BMS 60729 | CELLULAR AND MOLECULAR NEUROSCIENCE                                 |              |
- BSCI 50141 | EXPERIMENTAL DESIGN AND ANALYSIS IN MOLECULAR BIOLOGY               |              |
- BSCI 50158 | MOLECULAR BIOLOGY                                                   |              |
- BSCI 50148 | PRINCIPLES OF INFECTIOUS DISEASE                                    |              |
- BSCI 50150 | MOLECULAR MECHANISMS OF DISEASE: CANCER                              |              |
- BSCI 50151 | MECHANISMS OF DISEASE: OBESITY AND RELATED METABOLIC DISEASE         |              |
- BSCI 50152 | MOLECULAR MECHANISMS OF DISEASE: NEUROLOGICAL DISORDERS             |              |
- BSCI 50154 | DIABETES AND CARDIOVASCULAR DISEASE                                  |              |

Teachers holding or pursuing K-12 licensure are encouraged to choose from the following:

- BSCI 50163 | EVOLUTION                                                            |              |
- BSCI 50196 | INDIVIDUAL INVESTIGATION                                             |              |
- BSCI 60080 | EXPERIMENTAL METHODS IN BIOLOGY                                      |              |

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

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>BSCI 50374</td>
<td>CONSERVATION BIOLOGY</td>
<td>4</td>
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<tr>
<td>or</td>
<td>BSCI 50375</td>
<td>ENVIRONMENTAL BIOLOGY AND MANAGEMENT</td>
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</tbody>
</table>

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 50370 | ECOLOGICAL AND EVOLUTIONARY GENETICS
- BSCI 50371 | EVOLUTIONARY BIOLOGY
- BSCI 50372 | COMMUNITIES AND ECOSYSTEMS
- BSCI 50373 | POPULATION AND COMMUNITY ECOLOGY
- BSCI 50374 | CONSERVATION BIOLOGY
- BSCI 50375 | ENVIRONMENTAL BIOLOGY AND MANAGEMENT
- BSCI 50376 | TROPICAL FIELD BIOLOGY AND CONSERVATION
- BSCI 50380 | BIOGEOCHEMISTRY
- BSCI 50556 | VERTEBRATE ZOOLOGY
- GEOG 51077 | WATER AND SOCIETY
- GEOG 56080 | URBAN SUSTAINABILITY
- GEOG 59070 | GEOGRAPHIC INFORMATION SCIENCE
- GEOG 59230 | REMOTE SENSING
  or GEOG 52030 | REMOTE SENSING
- GEOL 52069 | HYDROGEOCHEMISTRY

Minimum Total Credit Hours: **15**

### Medical Biology Concentration Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSCI 50148</td>
<td>PRINCIPLES OF INFECTIOUS DISEASE</td>
<td></td>
</tr>
<tr>
<td>BSCI 50150</td>
<td>MOLECULAR MECHANISMS OF DISEASE: CANCER</td>
<td></td>
</tr>
<tr>
<td>BSCI 50151</td>
<td>MECHANISMS OF DISEASE: OBESITY AND RELATED METABOLIC DISEASE</td>
<td></td>
</tr>
<tr>
<td>BSCI 50152</td>
<td>MOLECULAR MECHANISMS OF DISEASE: NEUROLOGICAL DISORDERS</td>
<td></td>
</tr>
<tr>
<td>BSCI 50154</td>
<td>DIABETES AND CARDIOVASCULAR DISEASE</td>
<td></td>
</tr>
<tr>
<td>BSCI 50157</td>
<td>NEUROBIOLOGY OF DRUG ADDICTION</td>
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<tr>
<td>BSCI 50174</td>
<td>IMMUNOLOGY</td>
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<tr>
<td>BSCI 50431</td>
<td>NEUROENDOCRINOLOGY</td>
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<tr>
<td>BSCI 50432</td>
<td>ENDOCRINOLOGY</td>
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<tr>
<td>BSCI 50450</td>
<td>BIOLOGICAL CLOCKS</td>
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<tr>
<td>BSCI 50460</td>
<td>ADVANCED HUMAN PHYSIOLOGY</td>
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<tr>
<td>BSCI 50462</td>
<td>ADVANCED HUMAN PHYSIOLOGY: READINGS AND CASE STUDIES</td>
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<tr>
<td>BSCI 50517</td>
<td>MEDICAL HISTOLOGY</td>
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<td>BSCI 50519</td>
<td>HORMONES AND BEHAVIOR</td>
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<td>BSCI 60145</td>
<td>MEDICAL GENOMICS</td>
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<td>BSCI 60200</td>
<td>FOUNDATIONS OF NEUROSCIENCE</td>
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<tr>
<td>HED 64050</td>
<td>HEALTH BEHAVIOR</td>
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<td>PHIL 50005</td>
<td>HEALTH CARE ETHICS</td>
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<tr>
<td>SOC 62332</td>
<td>SOCIAL CONTROL OF MENTAL ILLNESS</td>
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</tr>
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</table>

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.