BIOLOGY - B.S.

College of Arts and Sciences
Department of Biological Sciences
www.kent.edu/biology

About This Program
Our Biology B.S. program provides you with a solid foundation in the fundamental principles of biology, as well as advanced knowledge in specialized areas of the discipline. With state-of-the-art facilities, cutting-edge technology and experienced faculty, you'll gain the skills needed to succeed in the fast-paced world of biology. Read more...

Contact Information
- Program Coordinator: Edgar Kooijman | ekooijma@kent.edu | 330-672-8568
- Speak with an Advisor
- Chat with an Admissions Counselor

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

Examples of Possible Careers and Salaries*

Biological science teachers, postsecondary
- 9.3% much faster than the average
- 64,700 number of jobs
- $85,600 potential earnings

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

Life scientists, all other
- 4.6% about as fast as the average
- 7,000 number of jobs
- $82,000 potential earnings

* Source of occupation titles and labor data comes 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.

Admission Requirements
The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

First-Year Students on the Kent Campus: First-year admission policy on the Kent Campus is selective. Admission decisions are based upon cumulative grade point average, strength of high school college preparatory curriculum and grade trends. Students not admissible to the Kent Campus may be administratively referred to one of the seven regional campuses to begin their college coursework. For more information, visit the admissions website for first-year students.

First-Year Students on the Regional Campuses: First-year admission to Kent State's campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Twinsburg Academic Center, is open to anyone with a high school diploma or its equivalent. For more information on admissions, contact the Regional Campuses admissions offices.

International Students: All international students must provide proof of English language proficiency unless they meet specific exceptions. For more information, visit the admissions website for international students.

Transfer Students: Students who have attended any other educational institution after graduating from high school must apply as undergraduate transfer students. For more information, visit the admissions website for transfer students.

Former Students: Former Kent State students or graduates who have not attended another college or university since Kent State may complete the reenrollment or reinstatement form on the University Registrar's website. Admission policies for undergraduate students may be found in the University Catalog.

Program Requirements

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<tr>
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<th>Credit Hours</th>
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Additional Requirements (courses do not count in major GPA)
### Molecular and Cellular Biology Concentration Requirements

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**Additional Requirements (courses do not count in major GPA)**

- Kent Core Social Sciences (must be from two disciplines): 6
- General Electives: 5

**Minimum Total Credit Hours:**

1. CHEM 20482 may be substituted with CHEM 30284 with faculty advisor approval.
2. Students should select their electives in consultation with an advisor. To fulfill this elective list, students must select a minimum of one from the following courses: BSCI 30105, BSCI 40191, BSCI 40192, BSCI 40196, BSCI 40199. However, they may only select a maximum of 4 credit hours of any combination of these courses (with no more than 4 credit hours S/U graded). Enrollment in these courses must be determined with a faculty advisor.

### Organismal Biology Concentration Requirements

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<td>or CHEM 30482</td>
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<td>or PHY 23101</td>
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| ORGANISMAL BIOLOGY CONCENTRATION REQUIREMENTS (courses count in major GPA)**

- Kent Core Social Sciences (must be from two disciplines): 6
- General Electives: 6

**Minimum Total Credit Hours:**

1. CHEM 20482 may be substituted with CHEM 30284 with faculty advisor approval.
2. Students should select their electives in consultation with an advisor. To fulfill this elective list, students must select a minimum of one from the following courses: BSCI 30105, BSCI 40191, BSCI 40192, BSCI 40196, BSCI 40199. However, they may only select a maximum of 4 credit hours of any combination of these courses (with no more than 4 credit hours S/U graded). Enrollment in these courses must be determined with a faculty advisor.

### Pre-Medicine/Pre-Podiatry/Pre-Dentistry Concentration Requirements

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<td>BSCI 30171</td>
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*CHEM 20482 may be substituted with CHEM 30284 with faculty advisor approval.*
The following Biological Sciences (BSCI) courses may NOT be used in the Graduation Requirements:

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<td>BSCI 26003</td>
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<td>BSCI 30050</td>
<td>HUMAN GENETICS</td>
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<td>BSCI 40020</td>
<td>BIOLOGY OF AGING</td>
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**Foreign Language College Requirement, B.S.**

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language.\(^1\)
- The Bachelor of Science in Medical Laboratory Science is exempt from this requirement.\(^2\)
- Minimum Elementary I and II of the same language

\(^1\) All students with prior foreign language experience should take the foreign language placement test to determine the appropriate level at which to start. Some students may start beyond the Elementary I level and will complete the requirement with fewer credit hours and fewer courses. This may be accomplished by (1) passing a course beyond Elementary I through Intermediate II level; (2) receiving credit through one of the alternative credit programs offered by Kent State University; or (3) demonstrating language proficiency comparable to Elementary II of a foreign language. When students complete the requirement with fewer than 8 credit hours and two courses, they will complete remaining credit hours with general electives.

\(^2\) The Bachelor of Science in Medical Laboratory Science exemption exists under another college policy (Three-Plus-One Programs).

**Roadmaps**

**Molecular and Cellular Biology Concentration**

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credits</th>
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<td>! BSCI 10110</td>
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<td>! CHEM 10060</td>
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<td>! CHEM 10062</td>
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<table>
<thead>
<tr>
<th>Semester Three</th>
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<tr>
<td>! BSCI 30140</td>
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<tr>
<td>! CHEM 20481</td>
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<td>or CHEM 30481</td>
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| CHEM 20482     | 0-3          |
| or CHEM 30475  |              |
| or CHEM 30482  |              |

\[ \text{Credits} \]

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**Graduation Requirements**

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<thead>
<tr>
<th>Minimum Major GPA</th>
<th>Minimum Overall GPA</th>
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<tr>
<td>2.000</td>
<td>2.000</td>
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The following Biological Sciences (BSCI) courses may NOT be used in the elective category for majors or minors in the Department of Biological Sciences:

<table>
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<tr>
<td>BSCI 10002</td>
<td>LIFE ON PLANET EARTH (KBS)</td>
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<tr>
<td>BSCI 10003</td>
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<td>BSCI 10005</td>
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<td>BSCI 11010</td>
<td>FOUNDATIONAL ANATOMY AND PHYSIOLOGY I (KLAB)</td>
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<td>BSCI 11020</td>
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<td>BSCI 16001</td>
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<td>BSCI 20019</td>
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**Minimum Total Credit Hours:** 50

1. Students must stay within a single organic chemistry series. CHEM 20482 is required if CHEM 20481 is selected in the major core; CHEM 30482 is required if CHEM 30481 is selected in the major core.

2. Students should select their upper-division biology electives in consultation with an advisor. The following courses are not required, but highly recommended for this major: BSCI 30518, BSCI 40174, BSCI 40433, BSCI 40434, BSCI 40517. In addition, students may take the following (maximum 6 credits total, maximum 4 credit hours S/U graded) for biology electives, but are not required to do so: BSCI 40191, BSCI 40192, BSCI 40196, BSCI 40199.

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<td>or</td>
<td>or ORGANIC CHEMISTRY II</td>
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**Minimum Total Credit Hours:** 120
Organismal Biology Concentration

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

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<th>Semester One</th>
<th>Credits</th>
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**Minimum Total Credit Hours:** 120
Pre-Medicine/Pre-Podiatry/Pre-Dentistry Concentration

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

Semester One

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<tr>
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Semester Two

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Semester Three

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<td>ORGANIC CHEMISTRY LABORATORY II</td>
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<td>CHEM 30284</td>
<td>INTRODUCTORY BIOLOGICAL CHEMISTRY or BIOCHEMICAL FOUNDATIONS OF MEDICINE</td>
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**Minimum Total Credit Hours:** 120

University Requirements

All students in a bachelor’s degree program at Kent State University must complete the following university requirements for graduation.

**NOTE:** University requirements may be fulfilled in this program by specific course requirements. Please see Program Requirements for details.

- Flashes 101 (UC 10001) 1 credit hour
- Writing-Intensive Course (WIC) 1 course
- Upper-Division Requirement 39 credit hours
- Total Credit Hour Requirement 120 credit hours

Kent Core Requirements

- Kent Core Composition (KCMP) 6
- Kent Core Mathematics and Critical Reasoning (KMCR) 3
- Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each) 9
- Kent Core Social Sciences (KSS) (must be from two disciplines) 6
- Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory) 6-7
- Kent Core Additional (KADL) 6
- Total Credit Hours: 36-37

Program Learning Outcomes

Graduates of this program will be able to:
1. Understand the fundamental biological principles.
2. Acquire the fundamental skills necessary for laboratory and field investigations.
3. Conduct proper experimental design, analyze biological data and communicate research results.
4. Know and appreciate the role that biology plays in societal issues, such as those related to the environment, biodiversity, ethics, human health and disease.

Full Description

The Bachelor of Science degree in Biology is for students who are interested in pursuing an in-depth specialization as a biologist or wish to pursue a medical or health care career.

The Biology major comprises the following concentrations:

- **The Molecular and Cellular Biology** concentration is the study of biological processes within and between individual cells, allowing for a better understanding of biological principles in normal and diseased states. The focus of this program includes concepts related to the genetic basis of life, regulation of gene expression and cellular functions.

- **The Organismal Biology** concentration allows students to examine organisms in their natural environment and address fundamental principles of survival and adaptation in discrete micro-environments and entire ecosystems. While basic concepts of biological and chemical functions are covered, the focus of this concentration is comprehensive aspects of the whole organism.

- **The Pre-Medicine/Pre-Podiatry/Pre-Dentistry** concentration prepares students for careers in medicine and health care. The curriculum provides the courses necessary for admission to advanced degree programs in healthcare and biomedical science professions.