ENVIRONMENTAL AND CONSERVATION BIOLOGY - B.S.

College of Arts and Sciences  
Department of Biological Sciences  
256 Cunningham Hall  
Kent Campus  
330-672-3613  
kentbiology@kent.edu  
www.kent.edu/biology

Description
The Bachelor of Science degree in Environmental and Conservation Biology is designed for students interested in a career in the environmental sciences. This program provides an interdisciplinary education in biology and the supporting fields of geology, geography and chemistry. Environmental and conservation biologists work to sustainably manage or restore ecosystems, develop and implement environmental policies, or conduct research on how ecological processes affect biological diversity.

Potential careers for graduates include wildlife ecologists, environmental educators, forest managers, environmental consultants and personnel at public environmental regulatory or land use planning agencies. The Department of Biological Sciences has several mechanisms to help students prepare for their future careers.

The Environmental and Conservation Biology major comprises the following concentrations:

- The Conservation Biology concentration provides a strong background in applied ecology, restoration ecology and habitat management strategies used to sustain biological diversity.
- The Environmental Policy and Management concentration provides opportunities to learn about the development and implementation of habitat management methods and public policies that promote the sustainable use of natural resources and address environmental problems.

Fully Offered At:
- Kent Campus

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.

Freshman Students on the Kent Campus: The freshman admission policy on the Kent Campus is selective. Admission decisions are based upon the following: cumulative grade point average, ACT and/or SAT scores, strength of high school college preparatory curriculum and grade trends. The Admissions Office at the Kent Campus may defer the admission of students who do not meet admissions criteria but who demonstrate areas of promise for successful college study. Deferred applicants may begin their college coursework at one of seven regional campuses of Kent State University. For more information on admissions, including additional requirements for some academic programs, visit the admissions website for new freshmen.

Freshman Students on the Regional Campuses: Kent State campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Regional Academic Center in Twinsburg, have open enrollment admission for students who hold a high school diploma, GED or equivalent.

English Language Proficiency Requirements for International Students:
All international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning a minimum 525 TOEFL score (71 on the Internet-based version), minimum 75 MELAB score, minimum 6.0 IELTS score or minimum 48 PTE score, or by completing the ESL level 112 Intensive Program. For more information on international admission, visit the Office of Global Education's admission website.

Transfer, Transitioning and Former Students: For more information about admission criteria for transfer, transitioning and former students, please visit the admissions website.

Program Learning Outcomes
Graduates of this program will be able to:

1. Demonstrate an understanding of fundamental biological principles.
2. Acquire fundamental skills necessary for laboratory and field investigations.
3. Demonstrate an understanding of proper experimental design, analysis of biological data and communication of research results.
4. Demonstrate a greater knowledge and appreciation of the role that biology plays in societal issues, such as those related to the environment, biodiversity, ethics, human health and disease.

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.

- Destination Kent State: First Year Experience 1
  - Course is not required for students with 25 transfer credits, excluding College Credit Plus, or age 21+ at time of admission.
- Diversity Domestic/Global (DIV/DIVG) 2 courses
  - Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.
- Experiential Learning Requirement (ELR) varies
  - Students must successfully complete one course or approved experience.
- Kent Core (see table below) 36-37
  - Writing-Intensive Course (WIC) 1 course
  - Students must earn a minimum C grade in the course.
- Upper-Division Requirement 39 (or 42)
  - Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate. Students in a B.A. and/or B.S. degree in the College of Arts and Sciences must complete 42 upper-division credit hours.
Total Credit Hour Requirement 120
Some bachelor's degrees require students to complete more than 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 Requirements
Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Major Requirements (courses count in major GPA)

BSCI 10110  BIOLOGICAL DIVERSITY (KBS) (KLAB)  4
BSCI 10120  BIOLOGICAL FOUNDATIONS (KBS) (KLAB)  4
BSCI 30156  ELEMENTS OF GENETICS  3
BSCI 30360  GENERAL ECOLOGY  4
BSCI 40163  EVOLUTION  3
BSCI 40600  WRITING IN THE BIOLOGICAL SCIENCES (WIC)  1
CHEM 10060  GENERAL CHEMISTRY I (KBS)  4
CHEM 10061  GENERAL CHEMISTRY II (KBS)  4
CHEM 10062  GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)  1
CHEM 10063  GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)  1
GEOG 39002  STATISTICAL METHODS IN GEOGRAPHY  3
or GEOL 42035  SCIENTIFIC METHODS IN GEOLOGY  3
GEOG 49070  GEOGRAPHIC INFORMATION SCIENCE  4
GEOL 11040  HOW THE EARTH WORKS (KBS)  3
GEOL 11041  HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)  1
MATH 12002  ANALYTIC GEOMETRY AND CALCULUS I (KMC)  5

Geography Electives, choose from the following:  6

GEOG 31062  FUNDAMENTALS OF METEOROLOGY  3
GEOG 31064  PRINCIPLES OF CLIMATOLOGY  3
GEOG 41052  GLACIERS AND GLACIATION  3
GEOG 41066  GLOBAL CLIMATE CHANGE  3
GEOG 41073  CONSERVATION OF NATURAL RESOURCES  3
GEOG 41074  RESOURCE GEOGRAPHY  3
GEOG 41082  GEOGRAPHY OF SOILS  3
GEOG 49080  ADVANCED GEOGRAPHIC INFORMATION SCIENCE  3
GEOG 49230  REMOTE SENSING  3

Geology Electives, choose from the following:  6-8

GEOL 32066  GEOMORPHOLOGY  3
GEOL 41077  GEOLOGY OF THE NATIONAL PARKS  3
GEOL 42067  INTRODUCTORY HYDROGEOLOGY  3

GEOL 42069  HYDROGEOCHEMISTRY  3
GEOL 42074  ENVIRONMENTAL CORE AND WELL LOGGING  3
GEOL 42078  ENGINEERING GEOLOGY  3
GEOL 43042  ENVIRONMENTAL GEOCHEMISTRY  3
GEOL 43044  ENVIRONMENTAL ISOTOPES  3
GEOL 44074  PALEOCEANOGRAPHY  3

Geology (GEOL Upper-Division Electives (30000 or 40000 level) with biology advisor approval)

Additional Requirements (courses do not count in major GPA)

UC 10097  DESTINATION KENT STATE: FIRST YEAR EXPERIENCE  1

Foreign Language (see Foreign Language College Requirement below)  8
Kent Core Composition  6
Kent Core Humanities and Fine Arts (minimum one course from each)  9
Kent Core Social Sciences (must be from two disciplines)  6
General Electives (total credit hours depends on earning 120 credit hours, including 42 upper-division credit hours)  7-8

Concentration Requirements
Choose from the following:  25-26

Conservation Biology
Environmental Policy and Management

Minimum Total Credit Hours: 120

1 A minimum C grade must be earned to fulfill the writing-intensive requirement.

Conservation Biology Concentration Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>

Concentration Requirements (courses count in major GPA)

BSCI 40374  CONSERVATION BIOLOGY (ELR)  4
CHEM 20481  BASIC ORGANIC CHEMISTRY I  4
CHEM 20482  BASIC ORGANIC CHEMISTRY II  4
CHEM 30475  ORGANIC CHEMISTRY LABORATORY I (ELR)  3

Concentration Electives, choose from the following:  16

ANTH 48835  PRIMATE ECOLOGY AND CONSERVATION  4
BSCI 30105  CAREER PATHWAYS IN BIOLOGY  4
BSCI 40199  SENIOR HONORS THESIS (ELR)  4
BSCI 40191  SENIOR SEMINAR  4
BSCI 40192  INTERNSHIP IN BIOLOGICAL SCIENCES (ELR)  4
BSCI 40196  INDIVIDUAL INVESTIGATION (ELR)  4
POL 10300  PUBLIC POLICY  4
POL 40440  U.S. ENVIRONMENTAL POLITICS AND POLICIES  4

Biology (BSCI) Upper-Division Electives (30000 or 40000 level)  2

Minimum Total Credit Hours: 25

1 No more than 4 credit hours may be S/U graded. 1 credit hour must come from a BSCI course option.

2 Students cannot select BSCI courses that will be used to meet the major or concentration requirements. Students should consult with their advisor to determine the most appropriate courses given their disciplinary interests and career aspirations.
## Environmental Policy and Management Concentration Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BSCI 40375</td>
<td>ENVIRONMENTAL BIOLOGY AND MANAGEMENT</td>
<td>4</td>
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<tr>
<td>Economics, Policies, Resources Electives, choose from the following:</td>
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<td>6</td>
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<tr>
<td>ECON 22060 &amp; ECON 32084</td>
<td>PRINCIPLES OF MICROECONOMICS (KSS) and ECONOMICS OF THE ENVIRONMENT</td>
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<tr>
<td>POL 10300 &amp; POL 40440</td>
<td>PUBLIC POLICY and U.S. ENVIRONMENTAL POLITICS AND POLICIES</td>
<td></td>
</tr>
<tr>
<td>RPTM 26081 &amp; RPTM 36082</td>
<td>PRINCIPLES OF OUTDOOR RECREATION and INTERPRETATION OF NATURAL AND CULTURAL RESOURCES</td>
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</tr>
<tr>
<td>RPTM 26081 &amp; RPTM 36083</td>
<td>PRINCIPLES OF OUTDOOR RECREATION and ENVIRONMENTAL EDUCATION AND CONSERVATION</td>
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</table>

Concentration Electives, choose from the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BSCI 30105</td>
<td>CAREER PATHWAYS IN BIOLOGY</td>
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<tr>
<td>BSCI 40199</td>
<td>SENIOR HONORS THESIS (ELR)</td>
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<tr>
<td>BSCI 40191</td>
<td>SENIOR SEMINAR</td>
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<tr>
<td>BSCI 40192</td>
<td>INTERNSHIP IN BIOLOGICAL SCIENCES (ELR)</td>
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<tr>
<td>BSCI 40196</td>
<td>INDIVIDUAL INVESTIGATION (ELR)</td>
<td>1</td>
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<tr>
<td>CHEM 20481</td>
<td>BASIC ORGANIC CHEMISTRY I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 20482</td>
<td>BASIC ORGANIC CHEMISTRY II</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 30745</td>
<td>ORGANIC CHEMISTRY LABORATORY I (ELR)</td>
<td>1</td>
</tr>
<tr>
<td>Biology (BSCI) Upper-Division Electives (30000 or 40000 level)</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 26

1. No more than 4 credit hours may be S/U graded. 1 credit hour must come from a BSCI course option.
2. Students cannot select BSCI courses that will be used to meet the major or concentration requirements. Students should consult with their advisor to determine the most appropriate courses given their disciplinary interests and career aspirations.

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## GRADUATION REQUIREMENTS

<table>
<thead>
<tr>
<th>Minimum Major GPA</th>
<th>Minimum Overall GPA</th>
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<tbody>
<tr>
<td>2.000</td>
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</tbody>
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### Foreign Language College Requirement

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language. 1
- 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 begin their university foreign language experience 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 the Elementary I through Intermediate II level or (2) receiving credit through Credit by Exam (CLEP), the College Level Examination Program (CLEP), the Advanced Placement (AP) exam or credit through the International Baccalaureate (IB) program; or (3) being designated a "native speaker" of a non-English language (consult with the College of Arts and Sciences Advising Office for additional Information). When students complete the requirement with fewer than 8 credit hours and two courses, they will complete the remaining hours with general electives.

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>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BSCI 10001</td>
<td>HUMAN BIOLOGY (KBS)</td>
<td>3</td>
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<tr>
<td>BSCI 10002</td>
<td>LIFE ON PLANET EARTH (KBS)</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 10003</td>
<td>LABORATORY EXPERIENCE IN BIOLOGY (KBS) (KLAB)</td>
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<tr>
<td>BSCI 10005</td>
<td>ANATOMY FOR VETERINARY TECHNICIANS</td>
<td>1</td>
</tr>
<tr>
<td>BSCI 11010</td>
<td>FOUNDATIONAL ANATOMY AND PHYSIOLOGY I (KBS) (KLAB)</td>
<td>5</td>
</tr>
<tr>
<td>BSCI 11020</td>
<td>FOUNDATIONAL ANATOMY AND PHYSIOLOGY II (KBS) (KLAB)</td>
<td>3</td>
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<tr>
<td>BSCI 16001</td>
<td>HORTICULTURAL BOTANY</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 20019</td>
<td>BIOLOGICAL STRUCTURE AND FUNCTION</td>
<td>4</td>
</tr>
<tr>
<td>BSCI 20021</td>
<td>BASIC MICROBIOLOGY</td>
<td>3</td>
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<tr>
<td>BSCI 20022</td>
<td>BASIC MICROBIOLOGY LABORATORY</td>
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<tr>
<td>BSCI 21010</td>
<td>ANATOMY AND PHYSIOLOGY I (KBS) (KLAB)</td>
<td>4</td>
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<tr>
<td>BSCI 21020</td>
<td>ANATOMY AND PHYSIOLOGY II</td>
<td>4</td>
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<tr>
<td>BSCI 26002</td>
<td>ECOLOGICAL PRINCIPLES OF PEST MANAGEMENT</td>
<td>3</td>
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<tr>
<td>BSCI 26003</td>
<td>PLANT IDENTIFICATION AND SELECTION I</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 26004</td>
<td>PLANT IDENTIFICATION AND SELECTION II</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 30050</td>
<td>HUMAN GENETICS</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 40020</td>
<td>BIOLOGY OF AGING</td>
<td>3</td>
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Roadmaps

- Conservation Biology Concentration
- Environmental Policy and Management Concentration
### CONSERVATION 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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<tbody>
<tr>
<td>! BSCI 10110 BIOLOGICAL DIVERSITY (KBS) (KLAB)</td>
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</tr>
<tr>
<td>! CHEM 10060 GENERAL CHEMISTRY I (KBS)</td>
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<tr>
<td>! CHEM 10062 GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)</td>
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<tr>
<td>UC 10097 DESTINATION KENT STATE: FIRST YEAR EXPERIENCE</td>
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<tr>
<td>Kent Core Requirement</td>
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<td>Kent Core Requirement</td>
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<td><strong>Credit Hours</strong></td>
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<thead>
<tr>
<th>Semester Two</th>
<th>Credits</th>
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<tbody>
<tr>
<td>! BSCI 10120 BIOLOGICAL FOUNDATIONS (KBS) (KLAB)</td>
<td>4</td>
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<tr>
<td>! CHEM 10061 GENERAL CHEMISTRY II (KBS)</td>
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<tr>
<td>! CHEM 10063 GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)</td>
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<td>General Electives</td>
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<th>Semester Three</th>
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<tr>
<td>! BSCI 30360 GENERAL ECOLOGY</td>
<td>4</td>
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<tr>
<td>CHEM 20481 BASIC ORGANIC CHEMISTRY I</td>
<td>4</td>
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<tr>
<td>CHEM 20482 or CHEM 30475</td>
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<tr>
<td>or ORGANIC CHEMISTRY LABORATORY I (ELR)</td>
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<td>Kent Core Requirement</td>
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<tr>
<td>Kent Core Requirement</td>
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<th>Semester Four</th>
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<tr>
<td>! BSCI 30156 ELEMENTS OF GENETICS</td>
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<tr>
<td>CHEM 20482 or CHEM 30475</td>
<td>0-2</td>
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<tr>
<td>or ORGANIC CHEMISTRY LABORATORY I (ELR)</td>
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<tr>
<td>GEOG 49070 GEOGRAPHIC INFORMATION SCIENCE</td>
<td>4</td>
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<td>! MATH 12002 ANALYTIC GEOMETRY AND CALCULUS I (KMCR)</td>
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<td>Kent Core Requirement</td>
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<thead>
<tr>
<th>Semester Five</th>
<th>Credits</th>
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<tr>
<td>BSCI 40374 CONSERVATION BIOLOGY (ELR)</td>
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<tr>
<td>GEOG 39002 or GEOL 42035</td>
<td>3</td>
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<tr>
<td>or STATISTICAL METHODS IN GEOGRAPHY or SCIENTIFIC METHODS IN GEOLOGY</td>
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<td>GEOL 11040 HOW THE EARTH WORKS (KBS)</td>
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<td>GEOL 11041 HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)</td>
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<tr>
<td>Foreign Language</td>
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<td><strong>Credit Hours</strong></td>
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<th>Semester Six</th>
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<tr>
<td>BSCI 40600 WRITING IN THE BIOLOGICAL SCIENCES (WIC)</td>
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<td>Concentration Elective</td>
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<td>Geography Elective</td>
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<td>Foreign Language</td>
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<td>Kent Core Requirement</td>
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<thead>
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<th>Semester Seven</th>
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<tr>
<td>! BSCI 40163 EVOLUTION</td>
<td>3</td>
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<tr>
<td>Concentration Electives</td>
<td>4</td>
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<td>Geography Elective</td>
<td>3</td>
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<td>Geology Elective</td>
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<tr>
<td>General Elective</td>
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<td><strong>Credit Hours</strong></td>
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</table>

Minimum Total Credit Hours: 120
### Environmental Policy and Management Concentration

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<thead>
<tr>
<th>Semester One</th>
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<tbody>
<tr>
<td>! BSCI 10110</td>
<td>BIOLOGICAL DIVERSITY (KBS) (KLAB) 4</td>
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<tr>
<td>! CHEM 10060</td>
<td>GENERAL CHEMISTRY I (KBS) 4</td>
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<tr>
<td>! CHEM 10062</td>
<td>GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB) 1</td>
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<tr>
<td>UC 10097</td>
<td>DESTINATION KENT STATE: FIRST YEAR EXPERIENCE 1</td>
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<th>Semester Two</th>
<th>Credits</th>
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<tbody>
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<td>! BSCI 10120</td>
<td>BIOLOGICAL FOUNDATIONS (KBS) (KLAB) 4</td>
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<td>! CHEM 10061</td>
<td>GENERAL CHEMISTRY II (KBS) 4</td>
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<td>! CHEM 10063</td>
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<tr>
<td>Kent Core Requirement</td>
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<tr>
<td><strong>Credit Hours</strong></td>
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<table>
<thead>
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<th>Semester Three</th>
<th>Credits</th>
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<tbody>
<tr>
<td>! BSCI 30360</td>
<td>GENERAL ECOLOGY 4</td>
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<tr>
<td>! MATH 12002</td>
<td>ANALYTIC GEOMETRY AND CALCULUS I (KMCR) 5</td>
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<tr>
<td>Economics, Policies, Resources Elective</td>
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<tr>
<td>Kent Core Requirement</td>
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<th>Semester Four</th>
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<tr>
<td>! BSCI 30156</td>
<td>ELEMENTS OF GENETICS 3</td>
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<tr>
<td>BSCI 40375</td>
<td>ENVIRONMENTAL BIOLOGY AND MANAGEMENT 4</td>
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<tr>
<td>GEOG 49070</td>
<td>GEOGRAPHIC INFORMATION SCIENCE 4</td>
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<td>Economics, Policies, Resources Elective</td>
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<tr>
<td>GEOL 11040</td>
<td>HOW THE EARTH WORKS (KBS) 3</td>
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<tr>
<td>GEOL 11041</td>
<td>HOW THE EARTH WORKS LABORATORY (KBS) (KLAB) 1</td>
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<tr>
<td>GEOG 39002 or</td>
<td>STATISTICAL METHODS IN GEOGRAPHY or SCIENTIFIC METHODS IN GEOLOGY 3</td>
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<tr>
<td>GEO 42035</td>
<td>FOREIGN LANGUAGE 4</td>
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<tr>
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<td>BSCI 40600</td>
<td>WRITING IN THE BIOLOGICAL SCIENCES (WIC) 1</td>
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<td>Geography Elective</td>
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<td>Foreign Language</td>
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<td>! BSCI 40163</td>
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| Minimum Total Credit Hours: | 120 |

### Geology Elective

| Credit Hours | 15 |

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Environmental and Conservation Biology - B.S.