ENVIRONMENTAL AND CONSERVATION BIOLOGY - B.S.

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

About This Program

The Environmental and Conservation Biology program combines the fundamental science of ecology with applied aspects of conservation and management to prepare you for one of many rewarding careers in environmental science. Enroll now and make a difference for future generations. Read more...

Contact Information

- **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*

Conservation scientists

- 3.4% about as fast as the average
- 28,500 number of jobs
- $67,950 potential earnings

Forest and conservation technicians

- -3.2% decline
- 33,800 number of jobs
- $54,310 potential earnings

Foresters

- 1.2% slower than the average
- 13,800 number of jobs
- $70,660 potential earnings

Forestry and conservation science teachers, postsecondary

- 4.0% about as fast as the average
- 1,600 number of jobs
- $100,830 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.

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 proficiency of the English language (unless they meet specific exceptions) through the submission of an English language proficiency test score or by completing English language classes at Kent State's English as a Second Language Center before entering their program. For more information, visit the admissions website for international students.

Former Students: Former Kent State students who have not attended another institution since Kent State and were not academically dismissed will complete the re-enrollment process through the Financial, Billing and Enrollment Center. Former students who attended another college or university since leaving Kent State must apply for admissions as a transfer or post-undergraduate student.

Transfer Students: Students who attended an educational institution after graduating from high school or earning their GED must apply as transfer students. For more information, visit the admissions website for transfer students.

Admission policies for undergraduate students may be found in the University Catalog's Academic Policies.

Students may be required to meet certain criteria to progress in their program. Any progression requirements will be listed on the program's Coursework tab

Program Requirements

Major Requirements

Code	Title	Credit Hours
Major Requirements (courses count in major GPA)		
BSCI 10110	BIOLOGICAL DIVERSITY (ELR) (KBS) (KLAB)	4
BSCI 10120	BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)	4
BSCI 30156	ELEMENTS OF GENETICS	3
BSCI 30360	GENERAL ECOLOGY	4

BSCI 40163	EVOLUTION	3
BSCI 40224	QUANTITATIVE METHODS IN BIOLOGY [1]	3-4
or ESCI 42035	DATA ANALYSIS IN THE EARTH SCIENCES	
or GEOG 39002	STATISTICAL METHODS IN GEOGRAPHY	
BSCI 40600	WRITING IN THE BIOLOGICAL SCIENCES (WIC) [2]	1
CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
ESCI 11040	HOW THE EARTH WORKS (KBS)	3
ESCI 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
GEOG 49070	GEOGRAPHIC INFORMATION SCIENCE	4
MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
Biology Elective, choose from the following: [3]		1-6
BSCI 30105	CAREER PATHWAYS IN BIOLOGY	
BSCI 40192	INTERNSHIP IN BIOLOGICAL SCIENCES (ELR)	
BSCI 40196	INDIVIDUAL INVESTIGATION (ELR)	
BSCI 40199	SENIOR HONORS THESIS (ELR)	
Earth Science Electives, choose from the following:		6-8
ESCI 32066	GEOMORPHOLOGY	
ESCI 33025	WATER AND THE ENVIRONMENT	
ESCI 41077	GEOLOGY OF THE NATIONAL PARKS	
ESCI 42065	WATERSHED HYDROLOGY	
ESCI 42066	PHYSICAL HYDROGEOLOGY	
ESCI 43042	ENVIRONMENTAL GEOCHEMISTRY	
ESCI 44072	MARINE PROCESSES	
ESCI 44074	PALEOCEANOGRAPHY	
Any Earth Science (ESCI) Upper-Division course (30000 or 40000 level) with biology advisor approval		
General Chemistry Electives, choose from the following: [4]		8
CHEM 10058 & CHEM 10059	GENERAL CHEMISTRY FOR LIFE SCIENCES I (KBS) and GENERAL CHEMISTRY FOR LIFE SCIENCES II	
CHEM 10060 & CHEM 10061	GENERAL CHEMISTRY I (KBS) and GENERAL CHEMISTRY II (KBS)	
Geography Electives, choose from the following:		6
GEOG 31062	FUNDAMENTALS OF METEOROLOGY	
GEOG 31064	CLIMATE AND THE ENVIRONMENT	
GEOG 31070	POPULATION AND THE ENVIRONMENT	
GEOG 41066	GLOBAL CLIMATE CHANGE	
GEOG 41073	CONSERVATION OF NATURAL RESOURCES	
GEOG 41077	WATER AND SOCIETY	
GEOG 41800	GLOBAL ENVIRONMENTAL ISSUES	
GEOG 46080	URBAN SUSTAINABILITY	
GEOG 49078	GEOGRAPHIC INFORMATION SCIENCE AND ENVIRONMENTAL HAZARDS	
GEOG 49080	ADVANCED GEOGRAPHIC INFORMATION SCIENCE	
GEOG 49230	REMOTE SENSING	
Any Geography (GEOG) Upper-Division course (30000 or 40000 level) with biology advisor approval		
Additional Requirements (courses do not count in major GPA)		
UC 10001	FLASHES 101	1
Foreign Language (see Foreign Language College Requirement below)		8
American Civic Literacy Requirement [5]		3
Kent Core Composition		6
Kent Core Humanities and Fine Arts (minimum one course from each) [5]		6-9
Kent Core Social Sciences (must be from two disciplines) [5]		3-6
General Electives (total credit hours depends on earning 120 credit hours, including 39 upper-division credit hours)		7
Concentrations		
Choose from the following:		25
Conservation Biology		
Environmental Policy and Management		
Minimum Total Credit Hours:		**120**

1. BSCI 40224, ESCI 42035 or GEOG 39002 can be taken during either fall or spring semester depending on which course is selected. Please speak with a faculty advisor to adjust courses accordingly.
2. A minimum C grade must be earned to fulfill the writing-intensive requirement.
3. Students should select their electives in consultation with a faculty advisor. A maximum 6 credit hours of any combination of BSCI 30105, BSCI 40192, BSCI 40196 and BSCI 40199 may be applied toward the major (with no more than 4 credit hours S/U graded).
4. Students who plan to attend a professional or graduate program are strongly encouraged to take CHEM 10060 and CHEM 10061.
5. If students complete the American Civic Literacy requirement by taking HIST 12061, the course will apply to the Kent Core Humanities category. If they complete it with POL 10101, the course will apply to the Kent Core Social Sciences category.

Conservation Biology Concentration Requirements

Code	Title	Credit Hours
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	1-2
or CHEM 30475	ORGANIC CHEMISTRY LABORATORY I (ELR)	
Concentration Electives, choose from the following: [1]		15
ANTH 48835	PRIMATE ECOLOGY AND CONSERVATION	
POL 10300	PUBLIC POLICY	
POL 40440	U.S. ENVIRONMENTAL POLITICS AND POLICIES	
Any Biological Sciences (BSCI) Upper-Division course (30000 or 40000 level) [2]		
Additional Requirements (courses do not count in major GPA)		
General Elective		1
Minimum Total Credit Hours:		**25**

1. Students should select their electives in consultation with a faculty advisor.
2. A maximum 6 credit hours of any combination of BSCI 30105, BSCI 40192, BSCI 40196 and BSCI 40199 may be applied toward the major (with no more than 4 credit hours S/U graded). Students cannot select biological sciences (BSCI) courses that will be used to meet major or concentration requirements. Students should consult with their faculty advisor to determine the most appropriate courses given their disciplinary interests and career aspirations.

Environmental Policy and Management Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
BSCI 40375	ENVIRONMENTAL BIOLOGY AND MANAGEMENT	4
Economics, Policies, Resources Electives, choose from the following:		6
ECON 22060 & ECON 32084	PRINCIPLES OF MICROECONOMICS (KSS) and ECONOMICS OF THE ENVIRONMENT	
PARK 21916 & PARK 36082	INTRODUCTION TO PARKS AND PROTECTED AREA MANAGEMENT and INTERPRETATION OF NATURAL AND CULTURAL RESOURCES	
PARK 21916 & PARK 36083	INTRODUCTION TO PARKS AND PROTECTED AREA MANAGEMENT and ENVIRONMENTAL EDUCATION AND CONSERVATION	
POL 10300 & POL 40440	PUBLIC POLICY and U.S. ENVIRONMENTAL POLITICS AND POLICIES	
Concentration Electives, choose from the following: [1]		15
CHEM 20481	BASIC ORGANIC CHEMISTRY I	
CHEM 20482	BASIC ORGANIC CHEMISTRY II	
CHEM 30475	ORGANIC CHEMISTRY LABORATORY I (ELR)	
Any Biological Sciences (BSCI) Upper-Division course (30000 or 40000 level) [2]		
Minimum Total Credit Hours:		**25**

[1] Students should select their electives in consultation with a faculty advisor.

[2] A maximum 6 credit hours of any combination of BSCI 30105, BSCI 40192, BSCI 40196 and BSCI 40199 may be applied toward the major (with no more than 4 credit hours S/U graded). Students cannot select biological sciences (BSCI) courses that will be used to meet major or concentration requirements. Students should consult with their faculty advisor to determine the most appropriate courses given their disciplinary interests and career aspirations.

Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.000	2.000

The following Biological Sciences (BSCI) courses may NOT be used in the elective category for majors or minors in the Department of Biological Sciences:

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

Foreign Language College Requirement, B.S.

- Students pursuing the Bachelor of Science degree in the College of Sciences and Humanities must complete 8 credit hours of foreign language.[1]
- The following programs are exempt from this requirement: The Bachelor of Science in Cybercriminology and the Bachelor of Science in Medical Laboratory Science.[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 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). The Bachelor of Science in Cybercriminology exemption is due to its extensive collaboration with and contribution from the Information Technology program in the College of Applied and Technical Studies, which does not have a foreign language requirement.

Roadmaps

Conservation Biology Concentration

This roadmap is a recommended semester-by-semester plan of study for this program. Students will work with their advisor to develop a sequence based on their academic goals and history. Courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		Credits
!	BSCI 10110	BIOLOGICAL DIVERSITY (ELR) (KBS) (KLAB)	4
!	CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
	UC 10001	FLASHES 101	1
!	General Chemistry Elective		4
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**16**
	Semester Two		
!	BSCI 10120	BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)	4

!	CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
!	General Chemistry Elective		4
	Kent Core Requirement		3
	General Elective		2
		Credit Hours	**14**
	Semester Three		
!	BSCI 30360	GENERAL ECOLOGY	4
	CHEM 20481	BASIC ORGANIC CHEMISTRY I	4
	CHEM 20482 or CHEM 30475	BASIC ORGANIC CHEMISTRY II or ORGANIC CHEMISTRY LABORATORY I (ELR)	0-2
	American Civic Literacy Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Four		
!	BSCI 30156	ELEMENTS OF GENETICS	3
	CHEM 20482 or CHEM 30475	BASIC ORGANIC CHEMISTRY II or ORGANIC CHEMISTRY LABORATORY I (ELR)	0-2
	GEOG 49070	GEOGRAPHIC INFORMATION SCIENCE	4
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Five		
	BSCI 40224 or ESCI 42035 or GEOG 39002	QUANTITATIVE METHODS IN BIOLOGY or DATA ANALYSIS IN THE EARTH SCIENCES or STATISTICAL METHODS IN GEOGRAPHY	0-4
	BSCI 40374	CONSERVATION BIOLOGY (ELR)	4
	ESCI 11040	HOW THE EARTH WORKS (KBS)	3
	ESCI 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
	Foreign Language		4
		Credit Hours	**15**
	Semester Six		
	BSCI 40224 or ESCI 42035 or GEOG 39002	QUANTITATIVE METHODS IN BIOLOGY or DATA ANALYSIS IN THE EARTH SCIENCES or STATISTICAL METHODS IN GEOGRAPHY	0-4
	BSCI 40600	WRITING IN THE BIOLOGICAL SCIENCES (WIC)	1
	Concentration Elective		3
	Geography Elective		3
	Foreign Language		4
	Kent Core Requirement		3
		Credit Hours	**14**
	Semester Seven		
!	BSCI 40163	EVOLUTION	3
	Biology Elective		1-6
	Concentration Elective		3
	Earth Science Elective		3-4
	Geography Elective		3
	General Elective		3
		Credit Hours	**16**
	Semester Eight		
	Concentration Electives		9
	Earth Science Elective		3-4
	General Elective		3
		Credit Hours	**15**
		Minimum Total Credit Hours:	**120**

Environmental Policy and Management Concentration

This roadmap is a recommended semester-by-semester plan of study for this program. Students will work with their advisor to develop a sequence based on their academic goals and history. Courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	BSCI 10110	BIOLOGICAL DIVERSITY (ELR) (KBS) (KLAB)	4
!	CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
	UC 10001	FLASHES 101	1
!	General Chemistry Elective		4
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**16**
	Semester Two		
!	BSCI 10120	BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)	4
!	CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
!	General Chemistry Elective		4
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Three		
!	BSCI 30360	GENERAL ECOLOGY	4
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	Economics, Policies, Resources Elective		3
	American Civic Literacy Requirement		3
		Credit Hours	**15**
	Semester Four		
!	BSCI 30156	ELEMENTS OF GENETICS	3
	BSCI 40375	ENVIRONMENTAL BIOLOGY AND MANAGEMENT	4
	GEOG 49070	GEOGRAPHIC INFORMATION SCIENCE	4
	Economics, Policies, Resources Elective		3
	General Elective		2
		Credit Hours	**16**
	Semester Five		
	BSCI 40224 or ESCI 42035 or GEOG 39002	QUANTITATIVE METHODS IN BIOLOGY or DATA ANALYSIS IN THE EARTH SCIENCES or STATISTICAL METHODS IN GEOGRAPHY	0-4
	ESCI 11040	HOW THE EARTH WORKS (KBS)	3
	ESCI 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
	Foreign Language		4
	Kent Core Requirement		3
		Credit Hours	**14**
	Semester Six		
	BSCI 40224 or ESCI 42035 or GEOG 39002	QUANTITATIVE METHODS IN BIOLOGY or DATA ANALYSIS IN THE EARTH SCIENCES or STATISTICAL METHODS IN GEOGRAPHY	0-4

	BSCI 40600	WRITING IN THE BIOLOGICAL SCIENCES (WIC)	1
	Biology Elective		1-6
	Concentration Elective		3
	Geography Elective		3
	Foreign Language		4
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Seven		
!	BSCI 40163	EVOLUTION	3
	Concentration Electives		6
	Earth Science Elective		3-4
	Geography Elective		3
		Credit Hours	**15**
	Semester Eight		
	Concentration Electives		6
	Earth Science Elective		3-4
	General Electives		5
		Credit Hours	**14**
		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
Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission.	
American Civic Literacy	3 credit hours
Experiential Learning Requirement (ELR)	varies
Students must successfully complete one course or approved experience.	
Kent Core (see table below)	36-37 credit hours
Writing-Intensive Course (WIC)	1 course
Students must earn a minimum C grade in the course.	
Upper-Division Requirement	39 credit hours
Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.	
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. 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.

Program Policies

Foreign Language Requirements

In general, students may elect any foreign language taught through the Department of Modern and Classical Language Studies. However, certain majors, concentrations and minors require specific languages or limit the languages from which students may choose. In addition, students who plan to pursue graduate study may need particular languages for that study. In such cases, students should seek the advice of the appropriate department before selecting a language.

Progress Toward Fulfillment

College of Sciences and Humanities students are encouraged to begin meeting the foreign language requirement as early as possible in their program to ensure timely degree completion.

Mandatory Outcomes Assessment

In addition to the other General Requirements of the college, candidates for an undergraduate degree in the College of Sciences and Humanities are required, as a condition of graduation, to participate in an outcomes assessment. These outcomes assessments are conducted by each undergraduate degree program in the College of Sciences and Humanities.

Full 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 earth sciences, 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.