

ENVIRONMENTAL AND CONSERVATION BIOLOGY - B.S.

College of Arts and Sciences
Department of Biological Sciences
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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 (DIVD/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 (KCOMP)	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

Code	Title	Credit Hours
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	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 or GEOL 42035	STATISTICAL METHODS IN GEOGRAPHY 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 (KMCR)	5
Geography Electives, choose from the following:		6
GEOG 31062	FUNDAMENTALS OF METEOROLOGY	
GEOG 31064	PRINCIPLES OF CLIMATOLOGY	
GEOG 41052	GLACIERS AND GLACIATION	
GEOG 41066	GLOBAL CLIMATE CHANGE	
GEOG 41073	CONSERVATION OF NATURAL RESOURCES	
GEOG 41074	RESOURCE GEOGRAPHY	
GEOG 41082	GEOGRAPHY OF SOILS	
GEOG 49080	ADVANCED GEOGRAPHIC INFORMATION SCIENCE	
GEOG 49230	REMOTE SENSING	
Geography Upper-Division Electives (GEOG 30000 or 40000 level) with biology advisor approval		
Geology Electives, choose from the following:		6-8
GEOL 32066	GEOMORPHOLOGY	
GEOL 41077	GEOLOGY OF THE NATIONAL PARKS	
GEOL 42067	INTRODUCTORY HYDROGEOLOGY	

GEOL 42069	HYDROGEOCHEMISTRY	
GEOL 42074	ENVIRONMENTAL CORE AND WELL LOGGING	
GEOL 42078	ENGINEERING GEOLOGY	
GEOL 43042	ENVIRONMENTAL GEOCHEMISTRY	
GEOL 43044	ENVIRONMENTAL ISOTOPES	
GEOL 44074	PALEOCEANOGRAPHY	
Geology Upper-Division Electives (GEOL 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
Concentrations		
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

[BS-ECB-CBIO]

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		16
ANTH 48835	PRIMATE ECOLOGY AND CONSERVATION	
BSCI 30105	CAREER PATHWAYS IN BIOLOGY	
BSCI 40199	SENIOR HONORS THESIS (ELR)	
BSCI 40191	SENIOR SEMINAR	
BSCI 40192	INTERNSHIP IN BIOLOGICAL SCIENCES (ELR)	
BSCI 40196	INDIVIDUAL INVESTIGATION (ELR)	
POL 10300	PUBLIC POLICY	
POL 40440	U.S. ENVIRONMENTAL POLITICS AND POLICIES	
Biology Upper-Division Electives (BSCI 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

[BS-ECB-EPM]

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	
POL 10300 & POL 40440	PUBLIC POLICY and U.S. ENVIRONMENTAL POLITICS AND POLICIES	
RPTM 26081 & RPTM 36082	PRINCIPLES OF OUTDOOR RECREATION and INTERPRETATION OF NATURAL AND CULTURAL RESOURCES	
RPTM 26081 & RPTM 36083	PRINCIPLES OF OUTDOOR RECREATION and ENVIRONMENTAL EDUCATION AND CONSERVATION	
Concentration Electives, choose from the following: ¹		16
BSCI 30105	CAREER PATHWAYS IN BIOLOGY	
BSCI 40199	SENIOR HONORS THESIS (ELR)	
BSCI 40191	SENIOR SEMINAR	
BSCI 40192	INTERNSHIP IN BIOLOGICAL SCIENCES (ELR)	
BSCI 40196	INDIVIDUAL INVESTIGATION (ELR)	
CHEM 20481	BASIC ORGANIC CHEMISTRY I	
CHEM 20482	BASIC ORGANIC CHEMISTRY II	
CHEM 30475	ORGANIC CHEMISTRY LABORATORY I (ELR)	
Biology Upper-Division Electives (BSCI 30000 or 40000 level) ²		
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.

GRADUATION REQUIREMENTS

Minimum Major GPA	Minimum Overall GPA
2.000	2.000

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 (CBE), 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:

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	ANATOMY FOR VETERINARY TECHNICIANS	5
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

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.

Course	Title	Credits
Semester One		
! BSCI 10110	BIOLOGICAL DIVERSITY (KBS) (KLAB)	4
! CHEM 10060	GENERAL CHEMISTRY I (KBS)	4
! CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
UC 10097	DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	1
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		16
Semester Two		
! BSCI 10120	BIOLOGICAL FOUNDATIONS (KBS) (KLAB)	4
! CHEM 10061	GENERAL CHEMISTRY II (KBS)	4
! CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
Kent Core Requirement		3
General Electives		2
Credit Hours		14
Semester Three		
! BSCI 30360	GENERAL ECOLOGY	4
CHEM 20481	BASIC ORGANIC CHEMISTRY I	4
CHEM 20482	BASIC ORGANIC CHEMISTRY II	0-2
or	or ORGANIC CHEMISTRY LABORATORY I	
CHEM 30475	(ELR)	
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15
Semester Four		
! BSCI 30156	ELEMENTS OF GENETICS	3
CHEM 20482	BASIC ORGANIC CHEMISTRY II	0-2
or	or ORGANIC CHEMISTRY LABORATORY I	
CHEM 30475	(ELR)	
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 40374	CONSERVATION BIOLOGY (ELR)	4
GEOG 39002	STATISTICAL METHODS IN GEOGRAPHY	3
or	or SCIENTIFIC METHODS IN GEOLOGY	
GEOL 42035		
GEOL 11040	HOW THE EARTH WORKS (KBS)	3
GEOL 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
Foreign Language		4
Credit Hours		15
Semester Six		
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
Concentration Electives		4
Geography Elective		3
Geology Elective		3-4
General Elective		3
Credit Hours		16
Semester Eight		
Concentration Electives		9
Geology 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 major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

Course	Title	Credits
Semester One		
! BSCI 10110	BIOLOGICAL DIVERSITY (KBS) (KLAB)	4
! CHEM 10060	GENERAL CHEMISTRY I (KBS)	4
! CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
UC 10097	DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	1
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		16
Semester Two		
! BSCI 10120	BIOLOGICAL FOUNDATIONS (KBS) (KLAB)	4
! CHEM 10061	GENERAL CHEMISTRY II (KBS)	4
! CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
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
Kent Core 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		
GEOL 11040	HOW THE EARTH WORKS (KBS)	3
GEOL 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
GEOG 39002 or GEOL 42035	STATISTICAL METHODS IN GEOGRAPHY or SCIENTIFIC METHODS IN GEOLOGY	3
Foreign Language		4
Kent Core Requirement		3
Credit Hours		14
Semester Six		
BSCI 40600	WRITING IN THE BIOLOGICAL SCIENCES (WIC)	1
Concentration Electives		4
Geography Elective		3
Foreign Language		4
Kent Core Requirement		3
Credit Hours		15
Semester Seven		
! BSCI 40163	EVOLUTION	3
Concentration Electives		6
Geography Elective		3

Geology Elective	3-4
Credit Hours	15
Semester Eight	
Concentration Electives	6
Geology Elective	3-4
General Electives	5
Credit Hours	14
Minimum Total Credit Hours:	120