

Ecology, Evolution and Biodiversity BS

Overview

The Earth harbors an incredible diversity of life, linked through webs of intricate ecological relationships and connected by deep evolutionary histories spanning millions of years. Human societies depend upon this biodiversity, yet much of it remains poorly understood by science and faces unprecedented threats from global change. The **Bachelor of Science in Ecology, Evolution and Biodiversity (EEB)**, offered by the Department of Biology, trains the next generation of scientists to pioneer new insights into the natural world, clarify the processes that maintain and change it, and develop innovative approaches to its conservation. The EEB program prepares students to forge new understandings of the ecological interactions among species and their evolutionary adaptations to their environments. Graduating students can launch their career as a research scientist, a science policy advisor, an environmental analyst or a science communicator. In education, graduates can aim for university professor, K-12 science teacher or environmental program director. Out in the field, graduates can enter jobs as a restoration ecologist, park naturalist and conservation or natural resource manager.

Campus Location: Main

Program Code: ST-EEB-BS

Distinction in Major

To graduate with distinction in this major, a student must satisfy the following criteria:

- achieve a minimum 3.2 cumulative grade point average (GPA);
- achieve a minimum 3.2 major GPA;
- successfully complete BIOL 4391 Accelerated Research in Biology or BIOL 4291 Extradepartmental Research for a total of 6 credits over two semesters;
- write a final research paper; and
- present their research at a departmental research poster session.

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Learn more about the Bachelor of Science in Ecology, Evolution and Biodiversity.

These requirements are for students who matriculated in academic year 2023-2024. Students who matriculated prior to fall 2023 should refer to the Archives to view the requirements for their Bulletin year.

Bachelor of Science Requirements

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
 - Students must complete all University requirements including those listed below.
 - All undergraduate students must complete at least two writing-intensive courses for a total of at least six credits at Temple as part of their major. The specific writing-intensive course options for this major are:

Code	Title	Credit Hours
BIOL 2297	Research Techniques in Genetics (S)	3
BIOL 4396	Advanced Study in Biology	3

- Students must complete the General Education (GenEd) requirements.
 - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
 - Students who complete CST majors receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
- Students must satisfy general Temple University residency requirements.

2. College Requirements

- A minimum of 90 total credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), and/or the College of Engineering (ENG).
 - A minimum of 45 of these credits must be upper-level (courses numbered 2000 and above).
- Complete a one-credit first-year or transfer seminar.
 - SCTC 1001 CST First Year Seminar for every entering first-year CST student.
 - SCTC 2001 CST Transfer Seminar for every entering transfer CST student.

3. Major Requirements for Bachelor of Science (74-82 s.h.)

At least 9 courses required for the major must be completed at Temple. At least 6 Biology courses must be completed at Temple.

Code	Title	Credit Hours
Biology		
BIOL 1111 or BIOL 1911	Introduction to Organismal Biology Honors Introduction to Organismal Biology	4
Select one of the following:		4
BIOL 1112 or BIOL 1912	Introduction to Biomolecules, Cells and Genomes Honors Introduction to Biomolecules, Cells and Genomes	
BIOL 2112 or BIOL 2912	Introduction to Cellular and Molecular Biology Honors Introduction to Cellular and Molecular Biology	
BIOL 2207	Genetics (S)	3
BIOL 2227	Principles of Ecology	3
BIOL 2297	Research Techniques in Genetics (WI, S) ¹	3
BIOL 3101	Evolution (F)	3
BIOL 4396	Advanced Study in Biology (WI)	3
Chemistry		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I (F)	
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II (S)	
Select one of the following:		4
CHEM 2201 & CHEM 2203	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I and Organic Honors Laboratory I (F)	
Ecology, Evolution, and Biodiversity (EEB) Electives		
Select six of the following, with at least one in each category: ^{2, 3}		18-24
Ecology		
BIOL 3115	Disturbance Ecology	
BIOL 3244	Experimental Marine Biology (Summer)	
BIOL 3245	Marine Ecology (F)	

BIOL 3254	Animal Behavior (S)	
BIOL 3275	Ecology of Invasive Species (F)	
BIOL 3316	Tropical Marine Biology (F, odd years)	
BIOL 3321	Plant Community Ecology (F)	
BIOL 3335	Life at the Extremes - Polar Biology	
BIOL 3336	Freshwater Ecology (F, even years)	
BIOL 3389	Field Research in Community Ecology (Summer)	
BIOL 4327	Biological Impacts of Global Climate Change (F)	
Evolution		
BIOL 3114	Evolutionary Ecology (F)	
BIOL 3128	Genomics and Infectious Disease Dynamics (F)	
BIOL 3211	Human Evolution	
BIOL 3212	Introduction to Bioinformatics and Computational Biology	
BIOL 3214	Theoretical Population Genetics	
BIOL 3225	Evolutionary Genetics (S)	
BIOL 3232	Behavioral Genetics (F)	
BIOL 3241	Genomics and Evolutionary Biology of Parasites and Other Dependent Species (S)	
BIOL 3403	Genomic Biology	
BIOL 4365	Evolutionary Developmental Biology: Evo-Devo (S)	
Biodiversity		
BIOL 2241	Invertebrate Biology (S)	
BIOL 3243	Parasitology (Not every year)	
BIOL 3307	Conservation Biology (F)	
BIOL 3311	Herpetology (S)	
BIOL 3317	General Microbiology (S)	
BIOL 3322	Biology of Plants (F)	
Mathematics and Quantitative Methods		
MATH 1041	Calculus I	4
or MATH 1941	Honors Calculus I	
SCTC 1013	Elements of Data Science for the Physical and Life Sciences	3
Select two of the following Quantitative Methods courses:		6-8
BIOL 3113	Genome Analytics	
BIOL 3312	Biostatistics (F)	
BIOL 3323	Global Change Science: Analytics with R	
EES 3011	Remote Sensing and GIS	
MATH 1042	Calculus II	
or MATH 1942	Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
Physics		
Select one of the following:		4
PHYS 1021	Introduction to General Physics I	
PHYS 1061	Elementary Classical Physics I	
or PHYS 1961	Honors Elementary Classical Physics I	
PHYS 2021	General Physics I	
or PHYS 2921	Honors General Physics I	
Select one of the following:		4
PHYS 1022	Introduction to General Physics II	
PHYS 1062	Elementary Classical Physics II	
or PHYS 1962	Honors Elementary Classical Physics II	
PHYS 2022	General Physics II	

or PHYS 2922

Honors General Physics II

Total Credit Hours **74-82**

Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

1

This course has a co-requisite of BIOL 2207.

2

Additional course prerequisites may be required.

3

Students may fulfill one upper-level elective by completing a total of 6 credits of research. A maximum of 3 credits may come from the junior level research course BIOL 3082 and the remaining 3 credits must come from a senior level (**4000+**) research course. Students may also complete all 6 credits using two semesters of the senior research course if they prefer. **Research must be appropriate to fulfill one of the upper-level elective categories (Ecology, Evolution, or Biodiversity)** and may be used for a maximum of 4 credits toward the elective. Consult with the EEB program advisor to determine 1) which labs are participating, 2) if your research is appropriate for one of the category choices and 3) which research course you should register for. Not all research courses are appropriate for EEB credit. Once 6 hours of research are completed, students must seek approval from a CST advisor to obtain the waiver for credit towards one upper-level elective in the appropriate category.

Code	Title	Credit Hours
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Other Suggested CoursesThese courses do not count for credits in the major but may be taken as free elective credits: ^{1, 2}

ANTH 2001	Evolution and Human Environments	3
ANTH 2763	Anthropological Genetics	3
ANTH 2764	Primate Behavior	3
ANTH 3196	Methods in Environmental Archaeology	3
ANTH 3796	Methods in the Study of Evolution	3
BIOL 2234	Dinosaur Paleobiology	3
BIOL 3201	Human Genetics (F)	3
BIOL 3204	Cell Structure and Function (F)	4
BIOL 3265	Developmental Biology (F)	3
BIOL 3324	Molecular Biology (F)	3
BIOL 3325	Research Techniques in Molecular Biology (S)	3
BIOL 3333	Advanced Techniques in Microscopy (S)	4
BIOL 3334	Mammalian Physiology (S)	4
BIOL 3337	Comparative Biomechanics (F)	3
BIOL 3396	Scientific Writing for Biology: The Art of Communicating	3
BIOL 4375	General Biochemistry I	3
BOT 1111	General Botany	4
BOT 1112	Plant Ecology	3
BOT 3166	Plant Taxonomy	3
CHEM 0877	The Chemistry of Global Environmental Issues	3
ECON 1001	Introduction to the Economy	3
ECON 3506	Energy, Ecology, and Economy	3
EES 2001	Physical Geology	4
EES 2002	Energy and Environment	3
EES 2051	Introduction to Data Visualization and Analysis for Earth and Environmental Science	3
EES 2096	Climate Change: Oceans To Atmosphere	4
ENST 2001	Environment and Society	3
ENST 2025	Environmental Law and Regulation	3
ENST 2097	Research Design in Environmental Studies	3

ENST 2157	Environmental Ethics	3
ENST 3051	Environmental Policy Issues	3
ENST 3053	Climatology	3
ENST 3062	Fundamentals of Geographic Information Systems	3
ENST 3068	Environmental Impact Assessment	3
ENVH 2102	Environmental Health	3
ENVT 4761	Environmental Regulations	3
HIST 3214	North American Environmental History	3
HORT 2114	Soils	3
JRN 3253	Health and Environmental Writing	3

1

Additional course prerequisites may be required.

2

Courses in CST and CLA will count towards the College Requirements for overall and upper-level credits in CST, CLA, or ENG.

With the exception noted in footnote 3 above, the research and independent study courses shown below do not count as EEB electives. The research and independent study courses shown below do not count as Biology electives, but they may count as free elective credits toward graduation. Most research courses can only be taken ONCE for a letter grade. Check individual course descriptions for details and/or exceptions.

Code	Title	Credit Hours
BIOL 2082	Independent Research I	1 to 4
BIOL 3082	Independent Research II	1 to 4
BIOL 3181	Cooperative Research in Biochemistry	3
BIOL 3681	Cooperative Studies	2 to 4
BIOL 3685	Externship Studies	3
BIOL 4291	Extrdepartmental Research	1 to 4
BIOL 4391	Accelerated Research in Biology	1 to 4
BIOL 4483	Accelerated Research in Biochemistry	3
BIOL 4491	Research in Biochemistry	3
BIOL 4591	Research in Neuroscience	1 to 4

Note: Grades of C- or higher are required unless otherwise specified in all courses for the major, including course prerequisites. The College of Science and Technology requires that students have a GPA of at least 2.00 overall and at least 2.00 in the courses applicable to their major and/or minor GPA to graduate.

Suggested Academic Plan

Please note that this is a suggested academic plan. Depending on your situation, your academic plan may look different.

Bachelor of Science in Ecology, Evolution and Biodiversity

Suggested Plan for New Students Starting in the 2023-2024 Academic Year

Year 1		Credit Hours
Fall		
BIOL 1111 or BIOL 1911	Introduction to Organismal Biology or Honors Introduction to Organismal Biology	4
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I (F)	
MATH 1041 or MATH 1941	Calculus I or Honors Calculus I	4
SCTC 1001	CST First Year Seminar	1

GenEd Breadth Course		3
	Credit Hours	16
Spring		
BIOL 2227	Principles of Ecology	3
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II (S)	
SCTC 1013	Elements of Data Science for the Physical and Life Sciences	3
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing or Analytical Reading and Writing: ESL or Honors Writing About Literature	4
Elective		1
	Credit Hours	15
Year 2		
Fall		
Select one of the following:		4
BIOL 1112 or BIOL 1912	Introduction to Biomolecules, Cells and Genomes or Honors Introduction to Biomolecules, Cells and Genomes	
BIOL 2112 or BIOL 2912	Introduction to Cellular and Molecular Biology or Honors Introduction to Cellular and Molecular Biology	
Select one of the following:		4
CHEM 2201 & CHEM 2203	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I and Organic Honors Laboratory I (F)	
Select one of the following:		4
PHYS 1021	Introduction to General Physics I	
PHYS 1061 or PHYS 1961	Elementary Classical Physics I or Honors Elementary Classical Physics I	
PHYS 2021 or PHYS 2921	General Physics I or Honors General Physics I	
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life or Honors Intellectual Heritage I: The Good Life	3
	Credit Hours	15
Spring		
BIOL 2207	Genetics (S)	3
BIOL 2297	Research Techniques in Genetics (S)	3
Select one of the following Quantitative Methods courses:		3-4
BIOL 3113	Genome Analytics	
BIOL 3312	Biostatistics	
BIOL 3323	Global Change Science: Analytics with R	
EES 3011	Remote Sensing and GIS	
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
Select one of the following:		4
PHYS 1022	Introduction to General Physics II	
PHYS 1062 or PHYS 1962	Elementary Classical Physics II or Honors Elementary Classical Physics II	
PHYS 2022 or PHYS 2922	General Physics II or Honors General Physics II	

IH 0852 or IH 0952	Intellectual Heritage II: The Common Good or Honors Intellectual Heritage II: The Common Good	3
Elective		1-0
Credit Hours		17
Year 3		
Fall		
BIOL 3101	Evolution	3
Select one of the following Quantitative Methods courses:		3-4
BIOL 3113	Genome Analytics	
BIOL 3312	Biostatistics	
BIOL 3323	Global Change Science: Analytics with R	
EES 3011	Remote Sensing and GIS	
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
EEB Elective 1 ¹		3-4
GenEd Breadth Course		3-4
Elective		3-0
Credit Hours		15
Spring		
EEB Elective 2 ¹		3-4
EEB Elective 3 ¹		3-4
GenEd Breadth Course		3
GenEd Breadth Course		3
Elective		3-1
Credit Hours		15
Year 4		
Fall		
EEB Elective 4 ¹		3-4
Select one of the following: ²		3-4
BIOL 4396	Advanced Study in Biology	
EEB Elective 5 ¹		
GenEd Breadth Course		3
Elective		2
Elective		3-1
Credit Hours		14
Spring		
Select one of the following: ²		3-4
BIOL 4396	Advanced Study in Biology	
EEB Elective 5 ¹		
EEB Elective 6 ¹		3-4
Elective		3
Elective		3
Elective		4-2
Credit Hours		16
Total Credit Hours		123
Code	Title	Credit Hours

(F) - Fall only course

(S) - Spring only course

1

See the Ecology, Evolution, and Biodiversity (EEB) Electives list under Requirements for course options. At least one course from each Elective category (Ecology, Evolution, and Biodiversity) must be selected.

2

Either BIOL 4396 or EEB elective 5 may be completed in the fall term. Whichever is not chosen in the fall, must then be completed in the spring term.