

Ecology and Evolution Major

www.biology.pitt.edu

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The field of Ecology explores the interactive web of organisms and the environment. Studies in evolution consider the processes by which modern organisms have developed from ancestral ones. The Ecology and Evolution major is a good choice for students interested in the fundamental questions of the evolutionary origins of organisms and how they survive or don't survive, in their changing habitats. Within this major, students have the opportunity for in-depth study of the morphological and physiological adaptations of a variety of animals, plants, and microorganisms to a changing world, the ecological relationships of organisms from the individual to the global scale, and the mechanisms that drive evolutionary change.

Employment opportunities in Ecology and Evolutionary Biology have increased greatly in recent years. There continues to be a demand for well-trained professionals at all levels (BS, MS, and PhD). Government environmental agencies, commercial consulting and testing firms, waste management industries, research laboratories, and natural history and science museums are just a few of the career opportunities. Graduate departments of ecology, evolution, environmental sciences, genetics, botany, public policy, and public health are actively seeking well-qualified students. The required chemistry, physics, and mathematics courses incorporate the requirements for admission to medical, dental, and other health-professional schools.

Requirements for the Ecology and Evolution Major

Biological Science courses

BIOSC 0150 Foundations of Biology 1
 BIOSC 005X Foundations of Biology Lab 1
 BIOSC 0160 Foundations of Biology 2
 BIOSC 006X Foundations of Biology Lab 2
 BIOSC 0350 Genetics
 BIOSC 0370 Ecology
 BIOSC 0390 Ecology Lab **or** BIOSC 1131 Evolution Lab
 BIOSC 1120 Biostatistics
 BIOSC 1130 Evolution
 BIOSC 1550 Ecology and Evolution Seminar

One of the following writing-intensive courses

BIOSC 0391 Ecology Lab Writing Practicum
 BIOSC 1551 Ecology and Evolution Seminar Writing Practicum

Elective courses; 9 credits

Students must complete at least nine credits in elective courses.

BIOSC 1000 Biochemistry
 BIOSC 1200 Vertebrate Morphology
 BIOSC 1275 Genomics
 BIOSC 1320 Population Biology
 BIOSC 1350 Plant Biology
 BIOSC 1375 Tropical Biology
 BIOSC 1435 Environmental Physiology of Animals
 BIOSC 1440 Animal Behavior
 BIOSC 1445 Animal Communication
 BIOSC 1520 Developmental Biology
 BIOSC 1540 Computational Biology
 BIOSC 1850 Microbiology

BIOSC 1998 Beneficial Microbes

Note: BIOSC 1440 Animal Behavior and BIOSC 1140 Behavioral Ecology (a Pymatuning field course) are considered course repeats, and you cannot take both for credit.

At least three of these credits must be a field course offered at the Pymatuning Laboratory of Ecology or on the Pittsburgh campus. For a list of approved field courses, please contact the Biology Advising Office and check the Pymatuning Laboratory of Ecology website (www.ple.pitt.edu). Field courses from other institutions may be approved by contacting bioadv@pitt.edu.

Co-requisite courses

Students must complete one of the three co-requisite tracks as described below.

Chemophysical track

CHEM 0110 General Chemistry 1
 CHEM 0120 General Chemistry 2
 CHEM 0310 Organic Chemistry 1
 CHEM 0320 Organic Chemistry 2
 CHEM 0345 Organic Chemistry Lab
 MATH 0220 Analytic Geometry and Calculus 1
 STAT 1000 Applied Statistical Methods
 PHYS 0110 Introduction to Physics 1 **OR**
 PHYS 0174 Basic Physics for Sci. & Engineering 1
 PHYS 0111 Introduction to Physics 2 **OR**
 PHYS 0175 Basic Physics for Sci. & Engineering 2

Quantitative track

CHEM 0110 General Chemistry 1
 CHEM 0120 General Chemistry 2
 MATH 0220 Analytic Geometry and Calculus 1

MATH 0230 Analytic Geometry and Calculus 2
STAT 1000 Applied Statistical Methods
STAT 1221 Applied Regression
STAT 1261 Principles of Data Science
STAT 1301 Statistical Packages

Environmental track

CHEM 0110 General Chemistry 1
CHEM 0120 General Chemistry 2
GEOL 0055 Geology Laboratory
GEOL 0820 Natural Disasters or GEOL 0840 Environ.Science
GEOL 1030 The Atmosphere, Oceans, and Climate
GEOL 1445, GIS, GPS, and Computer Methods
GEOL 1516 Environmental Geochemistry
MATH 0220 Analytic Geometry and Calculus 1
STAT 1000 Applied Statistical Methods

Frederick Honors College equivalent courses may be substituted for required or elective courses.

Writing (W) requirement

Students must complete at least one W-course in the major.
BIOSC 0391 and BIOSC 1551 meet this requirement.

Grade requirements

BIOSC Courses: Each required BIOSC course for the major must be completed with a grade of C or better. The elective courses for the major must also be completed with a grade of C or better. A minimum GPA of 2.0 in all departmental courses taken is required for graduation. If a C- or lower is earned in an elective course for the major but is not repeated, the course will be used to calculate the departmental GPA but will not be counted toward the 32 credits required for the major.

Co-requisite courses: Students must earn a minimum GPA of 2.0 in their co-requisite courses. A passing grade of C- or lower in a co-requisite course can be accepted if balanced by a higher grade in another co-requisite course so that the co-requisite GPA is 2.0 or higher.

Exceptions: CHEM 0110 and CHEM 0120 must be C or better to declare the major; PHYS 0110/0174 has to be C or better to enroll in PHYS 0111/0175; MATH 0220 has to be C or better to enroll in MATH 0230; STAT 1000 has to be B- or better to enroll in STAT 1221.

Satisfactory/No Credit option

One BIOSC course may be taken on an S/NC basis.

Restrictions

All BIOSC courses at the 0800-level are designed for non-majors. These courses do not count toward the major. Undergraduate teaching assistant (BIOSC 1690), independent study (BIOSC 1901), and undergraduate research credits (e.g., BIOSC 1903) do not count toward the major, though the department encourages students to pursue these opportunities.

Note about animal behavior: Animal Behavior (BIOSC 1440) and Behavioral Ecology (BIOSC 1140) are considered course repeats, and you cannot take both for credit.

Honors

A Dietrich School student may achieve honors in the Department of Biological Sciences by meeting academic and research requirements specified here:

www.biology.pitt.edu/undergraduate/advising-and-support/honors

Advising

The Biological Sciences Departmental Advisors are happy to meet with undeclared students, please make an appointment using Navigate Student. Students will officially be advised by the Bio Advising Team after declaring a major offered in the department. After declaring you will receive a welcome email with instructions by either late September or late January (depending on declaration date). Advising e-mail:

BioAdv@Pitt.edu

The Bio Advising Team supports and enriches the academic experience of students by helping with curricular decisions, as well as providing information and guidance on extracurricular options, career paths, and post-graduate plans. Information about our advising team can be found:

<https://www.biology.pitt.edu/undergraduate/advising-and-support/advisors>

Declaring the major: Before students officially declare the major, they must have completed BIOSC 0150, 0160 and CHEM 0110, 0120 with a grade of C (not C-) or better and cannot be in violation of [DSAS repeat rules](#). Transfer students who have finished these requirements prior to admission to the University of Pittsburgh are asked to complete one term of course work, including at least one BIOSC course that counts toward the major, before declaring.

Other Biological Sciences Department major options

Biological Sciences	Biochemistry
Computational Biology	Microbiology
Molecular Biology	

Checklist for the Ecology and Evolution major

Biological Science courses

_____ BIOSC 0150 **or** 0155 (UHC)
_____ BIOSC 005X
_____ BIOSC 0160 **or** 0165 (UHC)
_____ BIOSC 006X
_____ BIOSC 0350
_____ BIOSC 0370
_____ BIOSC 0390 **or** 1131
_____ BIOSC 1120
_____ BIOSC 1130
_____ BIOSC 1131
_____ BIOSC 1550

Writing Course

_____ BIOSC 0391 **or** 1551

Elective courses (9 credits)

_____ BIOSC _____
_____ BIOSC _____
_____ BIOSC _____ (field course)

Co-Requisite courses

Chemophysical track

_____ CHEM 0110	_____ MATH 0220
_____ CHEM 0120	_____ STAT 1000
_____ CHEM 0310	
_____ CHEM 0320	
_____ CHEM 0345	
_____ PHYS 0110 or 0174 or 0475	
_____ PHYS 0111 or 0175 or 0476	

Note: While not required for the major, PHYS 0212 Introduction to Laboratory Physics or PHYS 0219 Basic Laboratory Physics for Science & Engineering are useful for graduate study in certain sciences and is required for admission to many medical and dental schools.

Environmental track

_____ CHEM 0110	_____ GEOL 1445
_____ CHEM 0120	_____ GEOL 1516
_____ GEOL 0055	_____ MATH 0220
_____ GEOL 0820 or 0840	_____ STAT 1000
_____ GEOL 1030	

Quantitative track

_____ CHEM 0110	_____ STAT 1000
_____ CHEM 0120	_____ STAT 1221
_____ MATH 0220	_____ STAT 1261
_____ MATH 0230	_____ STAT 1301