BACHELOR OF ARTS (BA) DEGREE WITH A MAJOR IN ECOLOGY AND EVOLUTIONARY BIOLOGY

Program Learning Outcomes for the BA Degree with a Major in Ecology and Evolutionary Biology

Upon completing the BA degree with a major in Ecology and Evolutionary Biology, students will be able to:

1. Locate primary scientific literature and demonstrate the ability to apply critical thinking and problem solving skills to evaluate published and proposed research in the biological sciences.
2. Demonstrate an understanding of the modern scientific method, including a familiarity with current methods for designing experiments and/or mathematical models, and the ability to analyze and interpret data.
3. Demonstrate effective oral and written communication skills, including an ability to communicate effectively and work with diverse groups.
4. Demonstrate familiarity with the diversity of life.
5. Demonstrate a comprehensive knowledge of biology and an in-depth understanding of ecology and evolutionary biology.
6. Demonstrate understanding of the practice and culture of science, scientific ethics, and the relationship between science and society.

Requirements for the BA Degree with a Major in Ecology and Evolutionary Biology

For general university requirements, see Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements). Students pursuing the BA degree with a major in Ecology and Evolutionary Biology must complete:

- A minimum of 20 courses (minimum 49 credit hours) to satisfy major requirements. Additional credit hours may be required depending on course selection.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 11 courses (minimum 33 credit hours) taken at the 300-level or above.

The Ecology and Evolutionary Biology major is intended for students pursuing a wide range of careers in the life sciences. Coursework emphasizes a broad understanding of basic biology, together with in-depth knowledge of ecology and evolutionary biology that culminates in a required 400-level capstone course incorporating primary scientific literature, presentations, and writing in an advanced topic. The BA program is well suited for students with an additional major outside of the sciences, and students are strongly encouraged to take advantage of study abroad opportunities.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major's Official Certifier [https://registrar.rice.edu/facstaff/degreeworks/officialcertifier].) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Ecology and Evolutionary Biology</td>
<td>Minimum of 49</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Ecology and Evolutionary Biology</td>
<td>Minimum of 120</td>
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Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
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<tr>
<td></td>
<td>Non-Biology Courses ¹</td>
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<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<tr>
<td>or MATH 105</td>
<td>AP/OTH CREDIT IN CALCULUS I</td>
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<td>MATH 102</td>
<td>SINGLE VARIABLE CALCULUS II</td>
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<td>or MATH 106</td>
<td>AP/OTH CREDIT IN CALCULUS II</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>EBIO 338</td>
<td>DESIGN AND ANALYSIS OF BIOLOGICAL EXPERIMENTS</td>
<td></td>
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<tr>
<td>1 course from Statistics (STAT) departmental course offerings</td>
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<tr>
<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<tr>
<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<td>CHEM 123</td>
<td>GENERAL CHEMISTRY LABORATORY I</td>
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<tr>
<td>or CHEM 113</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY LAB I</td>
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<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<td>Biology Lecture Courses</td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
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<tr>
<td>BIOC 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<td>BIOC 325</td>
<td>ECOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 334 / BIOC 334</td>
<td>EVOLUTION</td>
<td>3</td>
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<td></td>
<td>Biology Laboratory Courses</td>
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<tr>
<td>BIOC 211</td>
<td>INTERMEDIATE EXPERIMENTAL BIOSCIENCES</td>
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<tr>
<td>BIOC 213</td>
<td>INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY</td>
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<tr>
<td></td>
<td>Scientific Communication Course</td>
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<td>EBIO 412</td>
<td>ADVANCED COMMUNICATION IN THE BIOLOGICAL SCIENCES</td>
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<td>Elective Requirements</td>
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<td></td>
<td>Lecture in Ecology and Evolutionary Biology</td>
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<tr>
<td>Select 2 courses from the following:</td>
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<tr>
<td>EBIO 321</td>
<td>ANIMAL BEHAVIOR</td>
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<tr>
<td>EBIO 323 / ENST 323</td>
<td>CONSERVATION BIOLOGY</td>
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<tr>
<td>EBIO 326</td>
<td>INSECT BIOLOGY</td>
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EBIO 328  EVOLUTION OF GENES & GENOMES
EBIO 329 / BIOC 329  ANIMAL BIOLOGY AND PHYSIOLOGY
EBIO 331 / BIOC 331  BIOLOGY OF INFECTIOUS DISEASES
EBIO 333 / COMP 370  EVOLUTIONARY BIOINFORMATICS
EBIO 336  PLANT DIVERSITY
EBIO 340 / ENST 340 / ESCI 340  GLOBAL BIOGEOCHEMICAL CYCLES
EBIO 365  INTRODUCTORY PHYCOLOGY
EBIO 366  APPLIED PHYCOLOGY
EBIO 372  CORAL REEF ECOSYSTEMS
EBIO 391  TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY
EBIO 433  ADVANCED ECOLOGY

Lecture in Biochemistry and Cell Biology

Select 1 course from the following:

BIOC 300  PARADIGMS IN BIOCHEMISTRY AND CELL BIOLOGY
BIOC 301  BIOCHEMISTRY I
BIOC 302  BIOCHEMISTRY II
BIOC 332 / BIOE 302  SYSTEMS PHYSIOLOGY
BIOC 335  CELLULAR AND MOLECULAR ANIMAL PHYSIOLOGY
BIOC 341  CELL BIOLOGY
BIOC 344  MOLECULAR BIOLOGY AND GENETICS
BIOC 352  PHYSICAL CHEMISTRY FOR THE BIOSCIENCES
BIOC 361 / BIOC 361 / GLHT 361  METABOLIC ENGINEERING FOR GLOBAL HEALTH ENVIRONMENTS
BIOC 368 / HUMA 368  CONCEIVING AND MISCONCEIVING THE MONSTROUS IN FICTION AND IN ART, IN MEDICINE AND IN BIOSCIENCE
BIOC 371  SEMINAR IN CONTEMPORARY BIOLOGICAL AND BIOMEDICAL RESEARCH
BIOC 372  IMMUNOLOGY
BIOC 380 / NEUR 380 / PSYC 380  FUNDAMENTAL NEUROSCIENCE SYSTEMS
BIOC 385 / NEUR 385  FUNDAMENTALS OF CELLULAR AND MOLECULAR NEUROSCIENCE
BIOC 390  TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY
BIOC 424  MICROBIOLOGY AND BIOTECHNOLOGY
BIOC 425  PLANT MOLECULAR GENETICS AND DEVELOPMENT
BIOC 443  DEVELOPMENTAL NEUROBIOLOGY
BIOC 445  ADVANCED MOLECULAR BIOLOGY AND GENETICS
BIOC 447  EXPERIMENTAL BIOLOGY AND THE FUTURE OF MEDICINE
BIOC 450  VIRUSES AND INFECTIOUS DISEASES

BIOC 460  CANCER BIOLOGY
BIOC 470  COMPUTATION WITH BIOLOGICAL DATA
BIOC 481  MOLECULAR BIOPHYSICS I
BIOC 482  STRUCTURAL BIOLOGY

EBIO Laboratory Course Requirement

Select 1 course from the following: 1-2

EBIO 316  LAB MODULE IN ECOLOGY
EBIO 317  LAB MODULE IN BEHAVIOR
EBIO 319  TROPICAL FIELD BIOLOGY
EBIO 320  ECOSYSTEMS AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
EBIO 324  CONSERVATION BIOLOGY LAB
EBIO 327  BIOLOGICAL DIVERSITY
EBIO 330  INSECT BIOLOGY LAB
EBIO 332  EVOLUTION OF GENES & GENOMES LAB
EBIO 335  EVOLUTIONARY BIOINFORMATICS LAB
EBIO 337  FIELD BIRD BIOLOGY LAB
EBIO 367  INTRODUCTION PHYCOLOGY LAB
EBIO 368  APPLIED PHYCOLOGY LAB
EBIO 379 / ENST 379 / SCUBA  LAB MODULE IN AQUATIC ECOLOGY
EBIO 393  LABORATORY TRANSFER CREDIT IN BIOSCIENCES

BIOC Laboratory Course Requirement

Select 1 course from the following or complete an additional laboratory course from the EBIO Laboratory requirement: 1-2

BIOC 311  ADVANCED EXPERIMENTAL BIOSCIENCES
BIOC 313  EXPERIMENTAL SYNTHETIC BIOLOGY
BIOC 318  MICROBIOLOGY LABORATORY
BIOC 320 / BIOE 342  LABORATORY IN TISSUE CULTURE
BIOC 333  BIONNOVATION STUDIO: FROM BASIC RESEARCH AND IDEATION TO TECHNOLOGY DEVELOPMENT
BIOC 415  EXPERIMENTAL PHYSIOLOGY

Natural Sciences or Engineering

Select 1 course offered by either the School of Natural Sciences or the School of Engineering at the 300-level or above: 3

Total Credit Hours Required for the Major in Ecology and Evolutionary Biology Minimum of 49

Additional Credit Hours to Complete BA Degree Requirements 11

University Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements) 60

Total Credit Hours Minimum of 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.
Bachelor of Arts (BA) Degree with a Major in Ecology and Evolutionary Biology

1. **Permissible substitutions:** BIOC 212 may be substituted for BIOC 211; MATH 111 and MATH 112 may be substituted for MATH 101 or MATH 105; CHEM 151 may be substituted for CHEM 121 or CHEM 111; CHEM 153 may be substituted for CHEM 123 or CHEM 113; PHYS 101 and PHYS 103 or PHYS 111 may be substituted for PHYS 125.

2. One of the advanced laboratory course requirements may be satisfied by taking EIBIO 206, if taken for at least 2 credit hours.

3. The elective course in Natural Science or Engineering must be taken for at least 3 credit hours. Courses offered by the School of Natural Sciences and the School of Engineering include the following subject codes: ASTR, BIOE, CAAM, CEVE, CHBE, CHEM, COMP, ELEC, ENGI, ENST, ESCI, GLHT, HEAL, KINE, MATH, MECH, MSNE, NSCI, PHYS, and STAT.

**Policies for the BA Degree with a Major in Ecology and Evolutionary Biology**

**Advising**
Rice University policies are governed primarily by the General Announcements; students are encouraged to look there first for academic policies. Advising information specific to the Department of BioSciences can be found at the department website by clicking on the tab for Undergraduate Studies: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Program Restrictions and Exclusions**
Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following program restrictions:

- Students pursuing the major in Ecology and Evolutionary Biology may not additionally declare the major in Biological Sciences.

**Transfer Credit**
For Rice University's policy regarding transfer credit, see Transfer Credit ([ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit](ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit)). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: [https://oaa.rice.edu](https://oaa.rice.edu). Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

**Departmental Transfer Credit Guidelines**
Students pursuing the major in Ecology and Evolutionary Biology should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

**Additional Information**
For additional information, please see the BioSciences website: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Opportunities for the BA Degree with a Major in Ecology and Evolutionary Biology**

**Academic Honors**
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors ([ga.rice.edu/undergraduate-students/honors-distinctions/university](ga.rice.edu/undergraduate-students/honors-distinctions/university)). Some departments have department-specific Honors awards or designations.

**Departmental Honors**
Instructions on applying for the Distinction in Research and Creative Work award from the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Research in the BioSciences**
Research is highly encouraged for all biosciences majors, and there are many opportunities for independent research at Rice. Information about research for credit and research internships specific to the Department of BioSciences can be found at the department website, by clicking on the link for Undergraduate Studies, at: [https://biosciences.rice.edu/](https://biosciences.rice.edu/).

**Additional Information**
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