BACHELOR OF SCIENCE (BS) DEGREE WITH A MAJOR IN ENVIRONMENTAL SCIENCE AND A MAJOR CONCENTRATION IN ECOLOGY AND EVOLUTIONARY BIOLOGY

Program Learning Outcomes for the BS Degree with a Major in Environmental Science

Upon completing the BS degree with a major in Environmental Science, students will be able to:

1. Demonstrate foundational knowledge in the natural sciences that is fundamental to the environmental sciences or application of the environmental sciences to other fields.
2. Integrate knowledge of natural and applied sciences to understand complex natural systems and cycles.
3. Synthesize knowledge from natural sciences and engineering and apply it to the study of the environment.
4. Understand environmental issues from a scientific perspective and be able to solve issues using a variety of interdisciplinary perspectives (e.g., social sciences, economics, humanities, and/or architecture).
5. Demonstrate knowledge and skills suitable for doing research and/or field studies in environmental science.

Requirements for the BS Degree with a Major in Environmental Science

For graduation requirements, see Graduation Requirements (https://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements/). Students pursuing the BS degree with a major in Environmental Science must complete:

- A minimum of 25-29 courses (72-78 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 132-138 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 5-7 courses (15-24 credit hours), depending on declared major concentration, taken at the 300-level or above.
- An advanced field or research experience requirement.
- A capstone senior seminar requirement.
- The requirements of a major concentration. When students declare the major (https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificate/#text) in Environmental Science, students must additionally identify and declare one of two major concentrations, either in:
  - Earth Science (https://ga.rice.edu/programs-study/departments-programs/natural-sciences/environmental-science/environmental-science-bs-earth-science-concentration/#Earth_Science), or
  - Ecology and Evolutionary Biology (p. 3).

Because of the common core requirements, it is possible for students to change their major concentration at any time, even after initially declaring the major. To do so, please contact the Office of the Registrar (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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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Environmental Science</td>
<td>72-78</td>
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<tr>
<td></td>
<td>Total Credit Hours Required for the BS Degree with a Major in Environmental Science</td>
<td>132-138</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>Foundation Coursework</td>
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<tr>
<td>BIOC 201</td>
<td>INTRODUCTORY BIOLOGY</td>
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<tr>
<td>EBIO 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<td>CHEM 121</td>
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<td>or CHEM 111</td>
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<tr>
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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>CHEM 122</td>
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<td>or CHEM 112</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY II</td>
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<td>CHEM 124</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
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<td>or CHEM 114</td>
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<tr>
<td>MATH 101</td>
<td>SINGLE VARIABLE CALCULUS I</td>
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<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>
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<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
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<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<td>Select 1 course from the following:</td>
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<tr>
<td>PHYS 101</td>
<td>MECHANICS (WITH LAB)</td>
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<tr>
<td>&amp; PHYS 103</td>
<td>and MECHANICS DISCUSSION</td>
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<td>PHYS 111</td>
<td>HONORS MECHANICS (WITH LAB)</td>
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<tr>
<td>PHYS 125</td>
<td>GENERAL PHYSICS (WITH LAB)</td>
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<tr>
<td>PHYS 102</td>
<td>ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<td>PHYS 104</td>
<td>ELECTRICITY AND MAGNETISM</td>
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<tr>
<td>PHYS 112</td>
<td>HONORS ELECTRICITY &amp; MAGNETISM (WITH LAB)</td>
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<tr>
<td>PHYS 126</td>
<td>GENERAL PHYSICS II (WITH LAB)</td>
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**Core Courses**

- ENST 100 / ARCH 105: ENVIRONMENT, CULTURE AND SOCIETY (3)
- ESCI 115: INTRODUCTION TO THE EARTH or ESCI 110: THE EARTH SYSTEM, ENVIRONMENT, AND SOCIETY (3 or 4)

**Select 1 course from the following:**

- ESCI 107: OCEANS AND GLOBAL CHANGE (3)
- ESCI 109: OCEANOGRAPHY (3)
- ESCI 201 / ENST 201: THE SCIENCE OF CLIMATE CHANGE (3)
- EBI 213: INTRO EXPERIMENTAL ECOLOGY AND EVOLUTIONARY BIOLOGY (2)
- EBI 325: ECOLOGY (3)

**Field Experience**

**Select 1-2 courses from the following:**

- EBI 306: INDEPENDENT RESEARCH FOR ECOLOGY & EVOLUTIONARY BIOLOGY UNDERGRADUATES (4)
- EBI 316: LAB MODULE IN ECOLOGY (4)
- EBI 317: LAB MODULE IN BEHAVIOR (4)
- EBI 319: TROPICAL FIELD BIOLOGY (4)
- EBI 320: ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY (2)
- EBI 324: CONSERVATION BIOLOGY LAB (3)
- EBI 327: BIOLOGICAL DIVERSITY (3)
- EBI 330: INSECT BIOLOGY LAB (3)
- EBI 337: FIELD BIRD BIOLOGY LAB (2)
- ENST 379 / EBI 379: LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA (3)
- ESCI 103: FIELD TRIPS FOR THE ENVIRONMENT (4)
- ESCI 334: GEOLOGICAL TECHNIQUES (4)
- ESCI 380 / FOTO 390: VISUALIZING NATURE (2)
- FWIS 187: EXPLORING THE SCIENCE AND HISTORY OF HOUSTON’S BAYOUS (3)

**Major Concentration**

Select 1 from the following Major Concentrations (see below for Major Concentration requirements):

- Earth Science
- Ecology and Evolutionary Biology

**Advanced Electives**

- Social Sciences
  - Select 1 course from the following:
    - ANTH 348: ANTHROPOLOGIES OF NATURE (3)
    - ANTH 381: MEDICAL ANTHROPOLOGY (3)
    - ANTH 410: MEDICAL ANTHROPOLOGY (3)
  - Select 1 course from the following:
    - IMM 230: INTRODUCTION TO IMMUNOLOGY (3)
    - IMM 330: ADVANCED IMMUNOLOGY (3)
    - IMM 430: IMMUNOLOGY OF IMMUNITY (3)
    - IMM 431: IMMUNOLOGY OF IMMUNITY (3)
    - IMM 432: IMMUNOLOGY OF IMMUNITY (3)
  - Select 1 course from the following:
    - IMM 230: INTRODUCTION TO IMMUNOLOGY (3)
    - IMM 330: ADVANCED IMMUNOLOGY (3)
    - IMM 430: IMMUNOLOGY OF IMMUNITY (3)
    - IMM 431: IMMUNOLOGY OF IMMUNITY (3)
    - IMM 432: IMMUNOLOGY OF IMMUNITY (3)

- Biological Sciences
  - Select 1 course from the following:
    - BIOL 205: INTRODUCTION TO BIOLOGY (3)
    - BIOL 206: INTRODUCTION TO BIOLOGY (3)
    - BIOL 207: INTRODUCTION TO BIOLOGY (3)
    - BIOL 208: INTRODUCTION TO BIOLOGY (3)
    - BIOL 209: INTRODUCTION TO BIOLOGY (3)
  - Select 1 course from the following:
    - BIOL 205: INTRODUCTION TO BIOLOGY (3)
    - BIOL 206: INTRODUCTION TO BIOLOGY (3)
    - BIOL 207: INTRODUCTION TO BIOLOGY (3)
    - BIOL 208: INTRODUCTION TO BIOLOGY (3)
    - BIOL 209: INTRODUCTION TO BIOLOGY (3)

- Environmental Science
  - Select 1 course from the following:
    - ENST 302 / ENST 307: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
    - ENST 303 / ENST 308: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
    - ENST 304 / ENST 309: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
    - ENST 310 / ENST 311: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
  - Select 1 course from the following:
    - ENST 302 / ENST 307: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
    - ENST 303 / ENST 308: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
    - ENST 304 / ENST 309: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)
    - ENST 310 / ENST 311: ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)

- Chemistry
  - Select 1 course from the following:
    - CHEM 205: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 206: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 207: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 208: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 209: INTRODUCTION TO CHEMISTRY (3)
  - Select 1 course from the following:
    - CHEM 205: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 206: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 207: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 208: INTRODUCTION TO CHEMISTRY (3)
    - CHEM 209: INTRODUCTION TO CHEMISTRY (3)

- Biology
  - Select 1 course from the following:
    - BIOL 205: INTRODUCTION TO BIOLOGY (3)
    - BIOL 206: INTRODUCTION TO BIOLOGY (3)
    - BIOL 207: INTRODUCTION TO BIOLOGY (3)
    - BIOL 208: INTRODUCTION TO BIOLOGY (3)
    - BIOL 209: INTRODUCTION TO BIOLOGY (3)
  - Select 1 course from the following:
    - BIOL 205: INTRODUCTION TO BIOLOGY (3)
    - BIOL 206: INTRODUCTION TO BIOLOGY (3)
    - BIOL 207: INTRODUCTION TO BIOLOGY (3)
    - BIOL 208: INTRODUCTION TO BIOLOGY (3)
    - BIOL 209: INTRODUCTION TO BIOLOGY (3)

- Environmental Engineering
  - Select 1 course from the following:
    - CEVE 302 / ENGI 302: SUSTAINABLE DESIGN (3)
    - CEVE 303 / ENGI 303: SUSTAINABLE DESIGN (3)
    - CEVE 304 / ENGI 304: SUSTAINABLE DESIGN (3)
    - CEVE 305 / ENGI 305: SUSTAINABLE DESIGN (3)
  - Select 1 course from the following:
    - CEVE 302 / ENGI 302: SUSTAINABLE DESIGN (3)
    - CEVE 303 / ENGI 303: SUSTAINABLE DESIGN (3)
    - CEVE 304 / ENGI 304: SUSTAINABLE DESIGN (3)
    - CEVE 305 / ENGI 305: SUSTAINABLE DESIGN (3)

- Geology
  - Select 1 course from the following:
    - ENGL 205: INTRODUCTION TO GEOLOGY (3)
    - ENGL 206: INTRODUCTION TO GEOLOGY (3)
    - ENGL 207: INTRODUCTION TO GEOLOGY (3)
    - ENGL 208: INTRODUCTION TO GEOLOGY (3)
    - ENGL 209: INTRODUCTION TO GEOLOGY (3)
  - Select 1 course from the following:
    - ENGL 205: INTRODUCTION TO GEOLOGY (3)
    - ENGL 206: INTRODUCTION TO GEOLOGY (3)
    - ENGL 207: INTRODUCTION TO GEOLOGY (3)
    - ENGL 208: INTRODUCTION TO GEOLOGY (3)
    - ENGL 209: INTRODUCTION TO GEOLOGY (3)
### Major Concentration: Ecology and Evolutionary Biology

Students must complete a total of 3 courses (9 credit hours) as listed below to satisfy the requirements for the major concentration in Ecology and Evolutionary Biology.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>EBIO 270</td>
<td>ECOSYSTEM MANAGEMENT</td>
<td>3</td>
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</tbody>
</table>

#### Footnotes and Additional Information

1. Please note that the course not completed in the Core Requirements list for the major concentration in Ecology and Evolutionary Biology may be completed and applied towards the major concentration's Elective Requirement.

2. The Core Courses acquaint students with a range of environmental topics encountered by scientists, engineers, managers, and policy makers. Core Courses stress the components of the global environment and their interactions, culminating with a tropical seminar that integrates across the field.

3. Students may also petition to complete alternative courses to be applied toward the Advanced Electives requirement.

4. In addition to the courses in the Natural Sciences and Engineering Advanced Electives list, students may complete 1 course listed in the major concentration requirements outside of the student's declared major concentration.

5. Students are encouraged, but not required, to undertake independent research on environmentally related topics.
Opportunities for the BS Degree with a Major in Environmental Science and a Major Concentration 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 (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/). Some departments have department-specific Honors awards or designations.

Independent Research
Students are encouraged to undertake independent research on environmentally related topics as part of their degree programs, in cooperation with one or more faculty. Course options for independent research, repeatable for credit, include: EBIO 403, EBIO 404, and ESCI 481.

Students also can enroll in senior honors thesis programs within their major concentrations, or by arrangement with other departments, and/or through the Rice Undergraduate Scholars Program. Students completing a thesis will also be eligible for the Distinction in Research and Creative Work, a university honor. Details for each program can be found here:

- ESCI Senior Honors Thesis (https://earthscience.rice.edu/academics/undergraduate-program/honors-thesis)
- Rice Undergraduate Scholars Program (https://ouri.rice.edu/rice-undergraduate-scholars-program-rusp-1)

Additional Information
For additional information, please see the following websites:

- https://biosciences.rice.edu/
- https://earthscience.rice.edu/academics/undergraduate-program/