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

Upon completing the BA 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 understand how it applies 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).

Requirements for the BA Degree with a Major in Environmental Science

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

- A minimum of 23-24 courses (66-71 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 4-6 courses (12-21 credit hours), depending on declared major concentration, taken at the 300-level or above.
- 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-certificates/#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-ba-earth-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 (registrar@rice.edu).

Environmental science is an interdisciplinary major that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues.

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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Environmental Science</td>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Environmental Science</td>
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### Degree Requirements

#### Core Requirements

<table>
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<tr>
<th>Code</th>
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<tbody>
<tr>
<td></td>
<td>Foundation Coursework</td>
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</tr>
<tr>
<td>BIOS 201</td>
<td>INTRODUCTORY BIOLOGY I</td>
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<tr>
<td>BIOS 202</td>
<td>INTRODUCTORY BIOLOGY II</td>
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<td>BIOS 332</td>
<td>ECOLOGY</td>
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<td>CHEM 121</td>
<td>GENERAL CHEMISTRY I</td>
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<td>or CHEM 111</td>
<td>AP/OTH CREDIT IN GENERAL CHEMISTRY I</td>
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<tr>
<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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<tr>
<td>CHEM 122</td>
<td>GENERAL CHEMISTRY II</td>
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<tr>
<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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<tr>
<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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<tr>
<td>STAT 280</td>
<td>ELEMENTARY APPLIED STATISTICS</td>
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</tr>
<tr>
<td>or STAT 305</td>
<td>INTRODUCTION TO STATISTICS FOR BIOSCIENCES</td>
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<tr>
<td>BIOS 213</td>
<td>INTRODUCTORY LAB IN ECOLOGY &amp; EVOLUTION</td>
<td>2</td>
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<tr>
<td>ENST 100 / ARCH 105</td>
<td>ENVIRONMENT, CULTURE AND SOCIETY</td>
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</table>

Any course (minimum 3 credit hours) from Earth, Environmental, and Planetary Sciences (EEPS) courses offerings at the 100-level (any course offerings between course numbers EEPS 100 and EEPS 199)
Bachelor of Arts (BA) Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

EEPS 321  EARTH AND PLANETARY SURFACE ENVIRONMENTS  4
EEPS 325  OCEANS, ATMOSPHERES AND CLIMATE  4

Field Experience
Select 1-2 courses from the following:  2-3
BIOS 204  ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE  3
BIOS 316  LAB MODULE IN ECOLOGY
BIOS 317  LAB MODULE IN BEHAVIOR
BIOS 319  TROPICAL FIELD BIOLOGY
BIOS 320  ECOLOGY AND CONSERVATION OF BRAZILIAN WETLANDS LABORATORY
BIOS 327  BIOLOGICAL DIVERSITY
BIOS 330  INSECT BIOLOGY LAB
BIOS 337  FIELD BIRD BIOLOGY LAB
EEPS 103  FIELD TRIPS FOR THE EARTH
EEPS 309 / FOTO 390  VISUALIZING NATURE
EEPS 334  THE EARTH LABORATORY
EEPS 390  GEOLOGY FIELD CAMP
EEPS 391  PRACTICAL EXPERIENCE IN EARTH, ENVIRONMENTAL AND PLANETARY SCIENCE

Major Concentration
Select 1 from the following Major Concentrations (see below for Major Concentration requirements):  9-12
Earth Science
Ecology and Evolutionary Biology

Advanced Electives  4

Social Sciences
Select 1 course from the following:  3
ANTH 348  ANTHROPOLOGIES OF NATURE
ANTH 381  MEDICAL ANTHROPOLOGY
ENST 301  ENVIRONMENTAL JUSTICE
ENST 302 / SOCIO 304  ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
ENST 312  JUSTICE IN THE FOOD SYSTEM
ENST 332 / ANTH 332  THE SOCIAL LIFE OF CLEAN ENERGY
ENST 367 / SOCIO 367  ENVIRONMENTAL SOCIOLOGY
ENST 437 / ECON 437  ENERGY ECONOMICS
ENST 480 / ECON 480  ENVIRONMENTAL AND ENERGY ECONOMICS
POLI 332  URBAN POLITICS
POLI 362  COMPARATIVE URBAN POLITICS AND POLICY
SOCIO 313  DEMOGRAPHY
SOCIO 368  SOCIOLOGY OF DISASTER
SOCIO 423  SOCIOLOGY OF FOOD

Humanities and Architecture
Select 1 course from the following:  3
ENGLISH 269 / ENGLISH 265  SCIENCE FICTION AND THE ENVIRONMENT
ENGLISH 310  NONFICTION NATURE WRITING
ENGLISH 358  CONSUMPTION AND CONSUMERISM
ENGLISH 459  STUDIES IN LITERATURE AND ECOLOGY
ENST 202 / HUMA 202  CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
ENST 205  RECKONING WITH THE ANTHROPOCENE
ENST 313 / ARCHITECTURE 313  CASE STUDIES IN SUSTAINABLE DESIGN
ENST 322 / ARCHITECTURE 322  REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
ENST 368 / ENGLISH 368  LITERATURE AND THE ENVIRONMENT
ENST 445  SEMINAR IN URBAN SUSTAINABILITY AND LIVABILITY RESEARCH METHODS AND APPLICATIONS
ENST 446  LAB IN ENGAGED URBAN SUSTAINABILITY AND LIVABILITY RESEARCH
HABITAT 302  FROM THE SUBLIME TO THE SUSTAINABLE: ART, ARCHITECTURE AND NATURE
HISTORICAL 321  US ENVIRONMENTAL HISTORY
HISTORICAL 470  ENCOUNTERING THE ENVIRONMENT: CASE STUDIES FROM THE GARDEN OF EDEN TO THE SPACE AGE
SPANISH 403  LITERATURE AND THE ENVIRONMENT IN LATIN AMERICA

Natural Sciences and Engineering  5
Select 1 from the following:  3-4
BIOS 280  SUSTAINABLE DEVELOPMENT AND REPORTING
BIOS 559  SUSTAINABILITY IMPACT ASSESSMENTS
CEVE 302 / ENGI 302  SUSTAINABLE DESIGN
CEVE 308  INTRODUCTION TO AIR POLLUTION CONTROL
CEVE 310  PRINCIPLES OF ENVIRONMENTAL ENGINEERING
CEVE 314 / BIO 365 / GLH 314  SUSTAINABLE WATER PURIFICATION FOR THE DEVELOPING WORLD
CEVE 323  APPLIED SUSTAINABLE PLANNING AND DESIGN
CEVE 401  CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE
CEVE 404  ATMOSPHERIC PARTICULATE MATTER
CEVE 411  ATMOSPHERIC CHEMISTRY AND CLIMATE
CEVE 412  HYDROLOGY AND WATER RESOURCES ENGINEERING
CEVE 420  ENVIRONMENTAL REMEDIATION RESTORATION
CEVE 434  FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT

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Major Concentration: Ecology and Evolutionary Biology

Students must complete a total of 3 courses (minimum of 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>BIOS 271</td>
<td>ENVIRONMENTAL MANAGEMENT</td>
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<tr>
<td>BIOS 373</td>
<td>CORAL REEF ECOSYSTEMS</td>
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<tr>
<td>BIOS 374</td>
<td>GLOBAL CHANGE BIOLOGY</td>
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</tr>
<tr>
<td>BIOS 423</td>
<td>CONSERVATION BIOLOGY</td>
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Elective Requirements

Select at least 1 course from the following:

<table>
<thead>
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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOS 321</td>
<td>ANIMAL BEHAVIOR</td>
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<tr>
<td>BIOS 326</td>
<td>INSECT BIOLOGY</td>
</tr>
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<td>BIOS 334</td>
<td>EVOLUTION</td>
</tr>
<tr>
<td>BIOS 336</td>
<td>PLANT DIVERSITY</td>
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<tr>
<td>BIOS 338</td>
<td>ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA</td>
</tr>
<tr>
<td>BIOS 373</td>
<td>CORAL REEF ECOSYSTEMS</td>
</tr>
<tr>
<td>BIOS 423</td>
<td>CONSERVATION BIOLOGY</td>
</tr>
<tr>
<td>BIOS 431</td>
<td>EMERGING INFECTIOUS DISEASES</td>
</tr>
<tr>
<td>EEPS 340</td>
<td>GLOBAL BIOGEOCHEMICAL CYCLES</td>
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</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 Requirements.

Policies for the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology

Program Restrictions and Exclusions

Students pursuing the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology should be aware of the following program restrictions:

- As noted in Majors, Minors, and Certificates (https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/) under Declaring Majors, Minors and Certificates, students may not obtain both a BA and a BS in the same major. Students pursuing the BA Degree with a Major in Environmental Science and a Major Concentration in Ecology and Evolutionary Biology may not additionally pursue the BS Degree with a Major in Environmental Science.
- Students pursuing the major in Environmental Science may pursue only one major concentration within the major.
- Students pursuing the major in Environmental Sciences and a major concentration in Ecology and Evolutionary Biology may not additionally declare the minor in Ecology and Evolutionary Biology.
Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (https://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 (https://oaa.rice.edu/advising-network/transfer-credit-advisors/) on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines
Students pursuing the major in Environmental Science should be aware of the following program 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 following websites:

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

Opportunities for the BA 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: BIOS 401, BIOS 402, and EEPS 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 (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/), a university honor. Details for each program can be found here:

• BIOS Honors Research (https://biosciences.rice.edu/research-overview)
• EEPS Senior Honors Thesis (https://eeps.rice.edu/eeps-honor-thesis/)

• Rice Undergraduate Scholars Program (https://ouri.rice.edu/rusp)

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

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