

# Biology: Ecology, Evolution and Organismal Biology B.A.

## Biology: Ecology, Evolution and Organismal Biology Major

The B.A. Biology: Ecology, Evolution and Organismal Biology major requires a minimum of 120 total hours to graduate. This total includes UNIFI/General Education requirements and the following specified major requirements, plus electives to complete the minimum of 120 hours.

This emphasis provides training to students interested in organismal and/or ecological biology. This emphasis is appropriate for students interested in a career with private and governmental organizations conducting endangered species recovery, ecological restoration, biological surveys, toxicity evaluations, environmental impact analyses, field research, museum or herbarium curation, or who wish to work in zoos, nature centers, museums, or botanical gardens. This emphasis also provides suitable background for students wishing to pursue graduate degrees in animal behavior, botany, conservation biology, ecology, environmental toxicology, evolutionary biology, systematics, population biology, and zoology. Students should seek advice and information early in their programs so that individual goals and specific additional requirements of some graduate and professional programs can be considered in curricular planning. Field courses offered during the summer program at Iowa Lakeside Laboratory may be accepted for biology elective credit.

Required: \*

Introductory track:		15
BIOL 2051	General Biology: Organismal Diversity	
BIOL 2052	General Biology: Cell Structure and Function	
BIOL 3100	Evolution, Ecology and the Nature of Science	
BIOL 3140	Genetics	
Cognate courses:		
Chemistry and Biochemistry:		5-8
CHEM 1110 & CHEM 1120 or CHEM 1130	General Chemistry I and General Chemistry II	
Mathematics:		3-5
Select one of the following:		
MATH 1120 & MATH 1130	Mathematics for Biological Sciences and Trigonometry	
MATH 1140	Precalculus	
MATH 1420	Calculus I	
STAT 1772	Introduction to Statistical Methods	
Physical Science		4
EARTHSCI 1300	Introduction to Geology	

or PHYSICS 1511 General Physics I

Electives: select from the following (consult with advisor): 26

Biology: ^

BIOL 3106	Vertebrate Anatomy	
BIOL 3109/5109	Plants of North America	
BIOL 3120	Plant Diversity and Evolution	
BIOL 3160	Field Zoology of Vertebrates	
BIOL 3170	Entomology	
BIOL 3174	Field Biology: _____	
BIOL 3185	Readings in Biology	
BIOL 3190	Undergraduate Research in Biology	
BIOL 4105/5105	Wildlife Ecology and Management	
BIOL 4108/5108	Biodiversity Conservation Policy	
BIOL 4114/5114	Comparative Animal Physiology	
BIOL 4142/5142	Evolutionary Biology	
BIOL 4146/5146	Developmental Biology of Animals	
BIOL 4157/5157	Biostatistics	
BIOL 4164/5164	Mammalogy	
BIOL 4167/5167	Conservation Biology	
BIOL 4168/5168	Ecology	
BIOL 4172/5172	Developmental Plant Anatomy	
BIOL 4180/5180	Restoration Ecology	
BIOL 4198	Independent Study	
CHEM 2040	Applied Organic and Biochemistry	
or CHEM 2210 & CHEM 2230	Organic Chemistry I and Organic Chemistry Laboratory	
GEOG 2410	Geographic Information Systems I	
or GEOG 4220/5220	Soils and Landscapes	
Total hours		53-58

\* Students must take at last seven (7) hours of 4000-level biology coursework pertinent to their major, with four (4) of those hours being taken at UNI.

^ No more than 4 credits from BIOL 3185 Readings in Biology, BIOL 3190 Undergraduate Research in Biology, and BIOL 4198 Independent Study will be counted toward biology degree requirements.

## Honors Research

Students invited to do Honors Research will complete 4 credit hours of BIOL 3190 Undergraduate Research in Biology and 1 credit hour of

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BIOL 3191 Senior Thesis. The following BA degrees are eligible for Honors Research: Biology BA, Biology: Biomedical BA, and Biology: Ecology, Evolution and Organismal Biology BA.

### Four-Year Plan

#### Biology: Ecology, Evolution and Organismal Biology, B.A.

This is a sample plan of study with a suggested sequencing of classes for the major. University electives may be applied to earn additional academic majors, minors, or certificates. Students should regularly meet with their academic advisor to plan their specific semester schedule to include UNIFI/General Education program and/or university elective hours required.

Course	Title	Hour
<b>Freshman</b>		
<b>Fall</b>		
BIOL 2051	General Biology: Organismal Diversity (or BIOL 2052 Gen Bio: Cell Structure & Function)	4
CHEM 1110	General Chemistry I	4
Math course required for major (Based on ALEKS score)		3
UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>14</b>
<b>Spring</b>		
BIOL 2052	General Biology: Cell Structure and Function (or BIOL 2051 Gen Bio: Organismal Diversity)	4
CHEM 1120	General Chemistry II	4
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>14</b>
<b>Sophomore</b>		
<b>Fall</b>		
BIOL 3100	Evolution, Ecology and the Nature of Science (or BIOL 3140 Genetics)	3
Biology Major Elective 3000-level **		4
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>13</b>
<b>Spring</b>		
BIOL 3140	Genetics (or BIOL 3100 Evolution, Ecology and the Nature of Science)	4
Biology Major Electives 3000-level **		4
UNIFI/General Education or University Electives		9
<b>Hours</b>		<b>17</b>
<b>Junior</b>		
<b>Fall</b>		
Biology Major Elective 3000/4000 Level **		4
Earth Science/Physics Course		4
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>14</b>
<b>Spring</b>		
Biology Major Elective 3000/4000 Level **		4
UNIFI/General Education or University Electives		13
<b>Hours</b>		<b>17</b>
<b>Senior</b>		
<b>Fall</b>		
Biology Major Elective 3000/4000 Level **		8

UNIFI/General Education or University Electives	6
<b>Hours</b>	<b>14</b>
<b>Spring</b>	
Biology Major Elective 3000/4000 Level **	3
UNIFI/General Education or University Electives	14
<b>Hours</b>	<b>17</b>
<b>Total Hours</b>	<b>120</b>

\* To graduate from UNI with a biology major, students must have both a cumulative and a major UNI GPA of 2.0 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the major.

\*\*Students must take at last seven (7) hours of 4000-level biology coursework pertinent to their major, with four (4) of those hours being taken at UNI.

### Learning Outcomes

#### Biology: Ecology, Evolution and Organismal Biology, B.A.

**Goals:** Students will gain an understanding of major themes in biology (organization of life, diversity and its causes, genetics, and cellular biology) along with deeper exposure to and advanced competency in topics in ecology, evolution, and organismal biology. Students will be able to think critically and communicate effectively on these discipline-specific topics.

#### Outcomes:

- Students will show proficiency in advanced content from the fields of ecology, evolution, and/or organismal biology that will allow students to explain biodiversity and the relationship of living things with their environment and with each other.
- Students will communicate effectively using discipline-specific vocabulary and standard written and oral scientific communication skills.
- Students will think critically about discipline-specific content as evidenced by an ability to interpret data, to effectively critique arguments, and/or to solve problems relating to natural systems.

### Policies

#### Majors

1. Students should indicate their interest in majoring in biology by filling out a Declaration of Curriculum form any time after their admission to UNI.
2. A student's freshman year shall be devoted primarily to completing the required course work in general biology (BIOL 2051 General Biology: Organismal Diversity and BIOL 2052 General Biology: Cell Structure and Function) and chemistry (CHEM 1110 General Chemistry I and CHEM 1120 General Chemistry II, or CHEM 1130 General Chemistry I-II). UNIFI/General Education and/or math classes should be taken by students to complete their schedules.
3. For the BS Biology, the BS Environmental Science, the BA Biology, the BA Biology Biomedical Emphasis, the BA Biology-Teaching, and the BA Biology Ecology, Evolution and Organismal Biology emphasis, students must receive a grade of C- (1.67) or higher in courses that are applied to their major. Prior to

enrollment in a course, all prerequisites must be completed with a C- (1.67) or higher.

4. ALEKS is a mathematics placement exam used at the University of Northern Iowa. Your academic advisor will use your score on the ALEKS assessment to determine your placement in UNI mathematics, chemistry, and physics courses.
5. A student enrolled in a biology class during fall or spring semester, or who drops a biology course after the first seven days of classes, should contact the department if they want to take the class again in an immediately subsequent semester. The student will only be allowed to register if space remains after all advanced registrations are completed.
6. To graduate from UNI with a BS Biology, a BA Biology, a BA Biology Biomedical Emphasis, or a BA Biology Ecology, Evolution and Organismal Biology emphasis, students must have both a cumulative and a major UNI GPA of 2.00 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the major. To graduate from UNI with a BA Biology-Teaching, students must have both a cumulative and a major UNI GPA of 2.50 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the major.
7. With the exception of the Biology 3+1 Joint program, to graduate from UNI with a biology major, students must take at least seven (7) hours of 4000-level biology coursework pertinent to their major, with four (4) of those hours being taken at UNI.
8. Transfer students entering UNI shall be subject to the acceptance requirements listed in #3.

## **Minors**

To graduate from UNI with a biology minor, students must have both a cumulative and a minor UNI GPA of 2.00 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the minor.

## **Notes:**

1. A student can declare only one major within the Department of Biology with the exception of the BA Biology Teaching major, which can be paired with another degree in biology.
2. A student with a major within the Department of Biology cannot declare a Biology minor or a Biology-Teaching minor.
3. A student with a major in the interdisciplinary B.A. Environmental Resource Management: Ecosystems Track may not also declare a major or minor in biology.
4. A student with a major in the interdisciplinary B.S. Environmental Science: Environmental Life Science Track may not also declare a major or minor in biology.

## **Related Programs**

- Biology M.S.
- Chemistry B.A. or B.S.