**CONSERVATION BIOLOGY, B.S.**

Conservation biology is a science-based major designed to provide students broad training in biological, ecological, and related disciplines most relevant to conservation. The program emphasizes basic knowledge of natural history, whole organism biology, ecological interactions, and field biology. The major is characterized by flexibility with a broad range of opportunities allowing students to tailor the program to their interests. This major appeals to independent students capable of assembling a curriculum that takes maximum advantage of both strong background, diversity, and specialization, as well as the breadth available through an L&S major. The program has a unique appeal to students passionate about conservation biology, from the social scientist to the theoretical ecologist, and empowers students to act as informed citizens of the natural world.

Aldo Leopold, former UW professor considered the father of wildlife management, and Norman Fassett, former UW professor of Botany, first initiated this major in the 1940s to prepare individuals for careers as game wardens, ranger naturalists, and museum workers. These opportunities continue and have expanded to include work in environmental education; forest, game and park management; endangered species research and recovery efforts; work with private conservation organizations and government agencies; and many more. The major is recommended for those seeking a liberal education in the intrinsic values of natural resources and those preparing for graduate study in the rapidly developing field of conservation biology.

**INTERNSHIP/FIELD EXPERIENCE**

Students in the conservation biology major are encouraged to take field courses when possible (including suitable study abroad programs) and to gain additional experience via summer jobs and paid or unpaid internships. Students who wish to obtain academic credit for such an experience should arrange in advance to take a Directed Study (e.g., BOTANY 699 Directed Study or ZOOLOGY 699 Directed Studies in Zoology course) as elective work in the major during or immediately after their internship. A maximum of 10 credits of directed study (698, 699), senior honors thesis (681, 682), senior thesis (691,692), or internships (F&W ECOL 399 Coordinative Internship/Cooperative Education, ZOOLOGY 677 Internship in Ecology) will count toward the major.

**HOW TO GET IN**

To declare the conservation biology major, students must contact or make an appointment (http://conservationbiology.ls.wisc.edu/faqs.htm) with the conservation biology student services coordinator.

If students are not currently in the College of Letters & Science (L&S), they must transfer into L&S before declaring. Students are welcome to meet with the conservation biology student services coordinator to discuss the major before transferring.

**REQUIREMENTS**

**UNIVERSITY GENERAL EDUCATION REQUIREMENTS**

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/#requirementsforundergraduatestudenttext) section of the Guide.

<table>
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<tr>
<th>Requirements</th>
<th>Detail</th>
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</table>
| General Education | • Breadth—Humanities/Literature/Arts: 6 credits  
• Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits  
• Breadth—Social Studies: 3 credits  
• Communication Part A & Part B *  
• Ethnic Studies *  
• Quantitative Reasoning Part A & Part B * |
|  | * The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements. |

**COLLEGE OF LETTERS & SCIENCE BREADTH AND DEGREE REQUIREMENTS: BACHELOR OF SCIENCE (B.S.)**

Students pursuing a bachelor of science degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either a bachelor of arts or a bachelor of science curriculum. View a comparison of the degree requirements here. (https://pubs.wisc.edu/home/archives/ug15/images/babs2009.pdf)

<table>
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<tr>
<th>Requirements</th>
<th>Detail</th>
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</table>
| Mathematics | Two (2) 3+ credits of intermediate/advanced level MATH, COMP SCI, STAT  
Limit one each: COMP SCI, STAT |
| Foreign Language | Complete the third unit of a foreign language  
Note: A unit is one year of high school work or one semester/term of college work. |
| L&S Breadth | • Humanities, 12 credits: 6 of the 12 credits must be in literature  
• Social Sciences, 12 credits  
• Natural Sciences, 12 credits: must include 6 credits in biological science; and must include 6 credits in physical science |
Conservation Biology, B.S.

Liberal Arts and Science Coursework 108 credits

Depth of Intermediate/Advanced work 60 intermediate or advanced credits

Major Declare and complete at least one (1) major

Total Credits 120 credits

UW-Madison Experience 30 credits in residence, overall

Minimum 30 credits in residence after the 90th credit

GPAs 2.000 in all coursework at UW–Madison

2.000 in intermediate/advanced coursework at UW–Madison

NON–L&S STUDENTS PURSUING AN L&S MAJOR

Non–L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements and do not need to complete the L&S breadth and degree requirements above.

REQUIREMENTS FOR THE MAJOR

Conservation biology majors must take at least 50 credits in the major. When selecting courses to meet major requirements, students are encouraged to meet with their faculty advisor or student services coordinator to discuss courses that align with their areas of academic interest.

INTRODUCTORY COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</table>

Introductory Biology

Select one of the following options: 10

Option 1 (recommended):

BIOLOGY/BOTANY/ZOOLOGY 151

BIOLOGY/BOTANY/ZOOLOGY 152

Option 2:

Select at least 10 credits from the following:

BIOCORE 381 Evolution, Ecology, and Genetics

BIOCORE 382 Evolution, Ecology, and Genetics Laboratory

BIOCORE 383 Cellular Biology

BIOCORE 384 Cellular Biology Laboratory

BIOCORE 485 Organismal Biology

BIOCORE 486 Organismal Biology Laboratory

Option 3:

BIOLOGY/ZOOLOGY 101 Animal Biology

BIOLOGY/ZOOLOGY 102 Animal Biology Laboratory

BIOLOGY/BOTANY 130 General Botany

Chemistry

Select one of the following:

CHEM 103 General Chemistry I

CHEM 108 Chemistry in Our World

CHEM 109 Advanced General Chemistry (for those who might take more chemistry)

Physical Environment

Select one of the following: 3-5

ATM OCN/GEOSCI Survey of Oceanography 105

ENVIR ST/GEOSCI Environmental Geology 106

ENVIR ST/GEOG Introduction to the Earth System 120

ENVIR ST/GEOG Physical Systems of the Environment 127

GEOSCI 100 General Geology

GEOSCI 107 Life of the Past

GEOSCI 202 Introduction to Geologic Structures

GEOSCI 204 Geologic Evolution of the Earth

Ecology and Evolution

Select two of the following, each from a different category (students are encouraged to take courses in all three areas): 6-7

Ecology:

BOTANY/F&W ECOL/ZOOLOGY 460 General Ecology

Evolution:

GEOSCI 110 Evolution and Extinction

or ANTHRO/BOTANY/ZOOLOGY 410 Evolutionary Biology

Extinction:

ENVIR ST/F&W ECOL/ZOOLOGY 360 Extinction of Species

Statistics

Select one of the following:

STAT 371 Introductory Applied Statistics for the Life Sciences

STAT 301 Introduction to Statistical Methods

STAT/F&W ECOL/HORT 571 Statistical Methods for Bioscience I

SPECIES & FIELD BIOLOGY

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</table>

12 credits from:

AGRONOMY/BOTANY/ SOIL SCI 370 Grassland Ecology

ENTOM/ZOOLOGY 371 Medical Entomology

AN SCI/F&W ECOL/ZOOLOGY 520 Ornithology
<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>M M &amp; I/</td>
<td>Parasitology Laboratory</td>
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<tr>
<td>PATH-BIO/</td>
<td></td>
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<tr>
<td>ZOOLOGY 351</td>
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<tr>
<td>PSYCH 449</td>
<td>Animal Behavior ¹</td>
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<tr>
<td>or ZOOLOGY 425</td>
<td>Behavioral Ecology</td>
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<tr>
<td>PSYCH 450</td>
<td>Primates and Us: Insights into Human Biology and Behavior</td>
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<tr>
<td>ZOOLOGY/</td>
<td>Limnology-Conservation of Aquatic Resources</td>
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<tr>
<td>ENVIR ST 315</td>
<td></td>
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<tr>
<td>ZOOLOGY 316</td>
<td>Laboratory for Limnology-Conservation of Aquatic Resources</td>
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<tr>
<td>ZOOLOGY 430</td>
<td>Comparative Anatomy of Vertebrates</td>
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¹ Students may apply both ZOOLOGY 425 Behavioral Ecology and PSYCH 449 Animal Behavior in the conservation biology program.

**ELECTIVES**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td><strong>Social Science Electives</strong></td>
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<tr>
<td>At least one</td>
<td>credit course from Social Science elective list:</td>
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<tr>
<td>A A E 215</td>
<td>Introduction to Agricultural and Applied Economics</td>
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<tr>
<td>A A E/</td>
<td>The Environment and the Global Economy</td>
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<tr>
<td>ENVIR ST 244</td>
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<tr>
<td>C&amp;E SOC/</td>
<td>Introduction to Community and Environmental Sociology</td>
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<tr>
<td>SOC 140</td>
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<tr>
<td>C&amp;E SOC/</td>
<td>Environment, Natural Resources, and Society</td>
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<tr>
<td>F&amp;W ECOL/</td>
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<tr>
<td>SOC 248</td>
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<tr>
<td>ECON 101</td>
<td>Principles of Microeconomics</td>
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<tr>
<td>ECON/ENVIR ST/</td>
<td>Government and Natural Resources</td>
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<td>POLI SCI/</td>
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<tr>
<td>URB R PL 449</td>
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<tr>
<td>ENVIR ST/</td>
<td>Living in the Global Environment: An Introduction to</td>
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<tr>
<td>GEOG 139</td>
<td>People-Environment Geography</td>
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<td>ENVIR ST/</td>
<td>Environmental Conservation</td>
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<tr>
<td>GEOG 339</td>
<td></td>
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<tr>
<td>ENVIR ST/</td>
<td>Environmental Law, Toxic Substances, and Conservation</td>
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<tr>
<td>GEOG 359</td>
<td></td>
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<tr>
<td>M&amp;ENVTOX/</td>
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<tr>
<td>PL PATH 368</td>
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<tr>
<td>ENVIR ST/</td>
<td>Environmental Ethics</td>
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<tr>
<td>PHILOS 441</td>
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<tr>
<td>ENVIR ST/GEOG/HISTORY 460</td>
<td>American Environmental History</td>
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<tr>
<td>ENVIR ST/GEOG/HISTORY 469</td>
<td>The Making of the American Landscape</td>
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<tr>
<td>GEOG 344</td>
<td>The American West</td>
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<td>GEOG 359</td>
<td>Australia: Environment and Society</td>
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<tr>
<td>GEOG 538</td>
<td>The Humid Tropics: Ecology, Subsistence, and Development</td>
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</table>

**Electives to attain 50 credits in the major**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AGRONOMY/</td>
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<tr>
<td>HORT 328</td>
<td>Integrated Weed Management</td>
<td></td>
</tr>
<tr>
<td>M &amp; I/ENTOM/</td>
<td></td>
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<tr>
<td>PATH-BIO/</td>
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<tr>
<td>ZOOLOGY 350</td>
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</tbody>
</table>
Conservation Biology, B.S.

AGRONOMY/ENTOM/F&W ECOL/M&ENVTOX 632
Ecotoxicology: The Chemical Players

AGRONOMY/ENTOM/F&W ECOL/M&ENVTOX 633
Ecotoxicology: Impacts on Individuals

AGRONOMY/ENTOM/F&W ECOL/M&ENVTOX 634
Ecotoxicology: Impacts on Populations, Communities and Ecosystems

ANTHRO 658
Ecological Models of Behavior

ATM OCN 100
Weather and Climate

ATM OCN 101
Weather and Climate

ATM OCN/ENVIR ST/GEOG 121
Atmospheric Environment and Society

ATM OCN/ENVIR ST 171
Global Change: Atmospheric Issues and Problems

BOTANY/PL PATH 123
Plants, Parasites, and People

BOTANY/ENVIR ST/ZOOLOGY 260
Introductory Ecology

BOTANY 300
Plant Anatomy

BOTANY 305
Plant Morphology and Evolution

BOTANY/ZOOLOGY 450
Midwestern Ecological Issues: A Case Study Approach

BOTANY/ENTOM/PL PATH 505
Plant-Microbe Interactions: Molecular and Ecological Aspects

BOTANY/ENVIR ST/F&W ECOL/ZOOLOGY 651
Conservation Biology

C&E SOC/ENVIR ST/GEOG 434
People, Wildlife and Landscapes

ENTOM/ZOOLOGY 540
Theoretical Ecology

ENTOM 699
Special Problems

ENVIR ST/ILS 126
Principles of Environmental Science

ENVIR ST/GEOG/SOIL SCI 230
Soil. Ecosystem and Resource

ENVIR ST 307
Literature of the Environment: Speaking for Nature

ENVIR ST/SOIL SCI 324
Soils and Environmental Quality

ENVIR ST/LAND ARC 361
Wetlands Ecology

ENVIR ST/CIV ENGR/GEOG 377
An Introduction to Geographic Information Systems

ENVIR ST/POP HLTH 471
Introduction to Environmental Health

ENVIR ST/PHYSICS 472
Scientific Background to Global Environmental Problems

ENVIR ST/F&W ECOL 515
Natural Resources Policy

ENVIR ST/GEOG 537
Culture and Environment

ENVIR ST/SOIL SCI 575
Assessment of Environmental Impact

F&W ECOL/ZOOLOGY 335
Human/Animal Relationships: Biological and Philosophical Issues

F&W ECOL 379
Principles of Wildlife Management

F&W ECOL 410
Principles of Silviculture

F&W ECOL 450
Communities and Forests

F&W ECOL 550
Forest Ecology

F&W ECOL 561
Wildlife Management Techniques

F&W ECOL/LAND ARC/ZOOLOGY 565
Principles of Landscape Ecology

F&W ECOL/HORT/STAT 571
Colloquium in Environmental Toxicology

ENVIR ST/F&W ECOL/SOIL SCI 606
Special Problems

GENETICS 466
Principles of Genetics

GEOG/GEOSCI 320
Geomorphology

GEOG/GEOSCI 420
Glacial and Pleistocene Geology

GEOSCI/G LE 627
Hydrogeology

LAND ARC 262
Landscape Inventory and Evaluation Methods

MICROBIO 101
General Microbiology

MICROBIO 102
General Microbiology Laboratory

PSYCH 606
Hormones and Behavior

SOIL SCI 301
General Soil Science

STAT/F&W ECOL/HORT 572
Statistical Methods for Bioscience II

ZOOLOGY 535
Ecosystem Analysis

RESIDENCE AND QUALITY OF WORK

2.000 GPA in all major courses

2.000 GPA on 15 upper-level major credits, taken in residence

15 credits in the major, taken on the UW–Madison campus

1 Courses in the major numbered 300 through 699 are considered upper level.

HONORS IN THE MAJOR

Students may declare Honors in the Conservation Biology Major in consultation with the Conservation Biology undergraduate advisor.
HONORS IN THE CONSERVATION BIOLOGY MAJOR REQUIREMENTS
To earn a B.A. or B.S. with Honors in the Major in Conservation Biology students must satisfy both the requirements for the major (above) and the following additional requirements:

• Earn a 3.300 overall university GPA
• Complete at least 16 credits, taken for Honors, in the conservation biology major, to include a two-semester Senior Honors Thesis in an appropriate department

1 Examples include Botany, Zoology, Environmental Studies; see the Conservation Biology advisor to verify that your thesis department will be acceptable.

UNIVERSITY DEGREE REQUIREMENTS

Requirements Detail
Total Degree  To receive a bachelor’s degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency  Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

Quality of Work  Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

1. Students will explain the basic concepts of ecology and evolution and how they underpin and apply to the science of conservation biology.
2. Students will understand and explain the scientific process as related to conservation biology, including the relevance of theories and how hypotheses are tested.
3. Students will recognize species within some particular group of organisms and explain key aspects of their ecology, phylogeny, and conservation needs.
4. Students will apply general ecological principles to assess and address conservation threats to particular species, communities, and ecosystems.
5. Students will investigate and communicate the connections between the biological and social sciences and humanities as they affect conservation programs and activities.
6. Students will identify, interpret, and communicate conservation ideas, needs and programs to others.

ADVISING AND CAREERS

ADVISING
Students in the conservation biology major are assigned to a team of advisors composed of a faculty advisor and the major’s student services coordinator. See the major’s advising page (http://conservationbiology.ls.wisc.edu/advising.htm) for a list of advisors and for the student services coordinator information.

The faculty advisor provides guidance specific to the discipline through discussions about undergraduate experiences (e.g., research, coursework, internships) that will help prepare students for graduate work or a career after graduation. The student services coordinator provides guidance specific to the discipline but helps students with major declarations, course selection, registration, DARS, L&S degree and major requirements, and tracking progress towards graduation, as well as connecting students with important resources on campus. Because the major is so broad and involves so much choice, it is important for students to meet early and regularly with their student services coordinator and faculty advisor.

Students contemplating graduate work in a biological discipline are advised to take the following:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOLOGY/ BOTANY/ ZOOLOGY 151</td>
<td>Introductory Biology</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY/ BOTANY/ ZOOLOGY 152</td>
<td>Introductory Biology</td>
<td></td>
</tr>
<tr>
<td>ANTHRO/ BOTANY/ ZOOLOGY 410</td>
<td>Evolutionary Biology</td>
<td></td>
</tr>
<tr>
<td>BOTANY/ F&amp;W ECOL/ ZOOLOGY 460</td>
<td>General Ecology</td>
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Although not required for the major, such students are also encouraged to take the following:

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 104</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>GENETICS 466</td>
<td>Principles of Genetics</td>
<td></td>
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<tr>
<td>PHYSICS 103</td>
<td>General Physics</td>
<td></td>
</tr>
<tr>
<td>PHYSICS 104</td>
<td>General Physics</td>
<td></td>
</tr>
<tr>
<td>MATH 221</td>
<td>Calculus and Analytic Geometry 1</td>
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</tr>
</tbody>
</table>

PEOPLE

Professors Ane, Baum, Cameron (chair), Emshwiller, Fernandez, Gilroy, Givnish, Graham, Hotchkiss, Larget, Otegui, Spalding, Sytsma, Waller

Associate Professor Pringle

Assistant Professors Keefover-Ring, Maeda, McCulloh
Majors will eventually choose from the faculty a Senior Thesis advisor, who then will be the student’s undergraduate advisor. Prospective majors should contact the general advisors directly.

Committee of Advisors: Professors Givnish (Botany), Hotchkiss (Botany/Environmental Studies), Ives (Zoology), Strier (Anthropology), Townsend (Forest & Wildlife Ecology), Vander Zanden (Center for Limnology/Zoology), Waller (Botany, chair of major)