**Zoology**

**Bachelor of Science degree with a major in Zoology**

**Minor in Zoology**

**Master of Science degree in Biology** [see Biology]

**Department Chair**
Amy Sprowles, Ph.D.

**Department of Biological Sciences**
Science Complex B 221
707-826-3245
humboldt.edu/biosci

**The Program**

Students completing this program will have demonstrated the ability to:

- apply the scientific method to questions in biology by formulating testable hypotheses, gathering data that address these hypotheses, and analyzing those data to assess the degree to which their scientific work supports their hypotheses
- present scientific hypotheses and data both orally and in writing in the formats that are used by practicing scientists
- access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works
- apply fundamental mathematical tools (statistics, calculus) and physical principles (physics, chemistry) to the analysis of relevant biological situations
- identify the major groups of organisms and be able to classify them within a phylogenetic framework. Students will be able to compare and contrast the characteristics of organisms that differentiate the various domains and kingdoms from one another
- use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on Earth. They will be able to use specific examples to explicate how descent with modification has shaped organismal morphology, physiology, life history, and behavior
- explain how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life
- explicate the ecological interconnectedness of life on earth by tracing energy and nutrient flows through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems
- demonstrate proficiency in the experimental techniques and methods of analysis appropriate for their area of specialization within biology.

Zoology students at Humboldt can take advantage of our well-developed vertebrate and invertebrate museums. Nearby coastlines, forests, and mountains offer opportunities for studying animals in their native habitats; we also house animals in on-campus quarters. Molecular biology facilities and electron microscopes are available for student use.

Students interested in marine life have use of Humboldt’s marine laboratory, located in nearby Trinidad, and the university’s research vessel, the Coral Sea.

Zoology graduates pursue such careers as: technical writer; zookeeper; environmental consultant; entomologist; herpetologist; mammalogist; health technician; animal nutritionist; laboratory technician; museum curator; science librarian.

**Preparation**

In high school take biology, chemistry, and physics (with labs, if possible) plus algebra, geometry, and trigonometry.

**REQUIREMENTS**

Students who receive a grade below a C- in any prerequisite course will require instructor approval for enrollment.

**REQUIREMENTS FOR THE MAJOR**

For a description of degree requirements to be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 67-82, and “The Master’s Degree” section of the catalog, pp. 83-84.

**Lower Division** (34-37 units)

BIOL 105  (4) Principles of Biology
BOT 105  (4) General Botany
CHEM 109  (5) General Chemistry I
CHEM 110  (5) General Chemistry II
CHEM 228  (4) Brief Organic Chemistry
MATH 105  (3) Calculus for the Biological Sciences & NF, or
MATH 109  (4) Calculus I
PHYX 106  (4) College Physics: Mechanics & Heat

**Upper Division** (38-41 units)

BIOL 360  (4) Evolution
BIOL 330  (4) Principles of Ecology
BIOL 340  (3) Genetics, and
BIOL 340L  (3) Genetics Lab
BIOL 350  (3) Cell Biology
ZOOL 310  (4) Animal Physiology

**Animal Structure & Function [take one course]**

ZOOL 370  (4) Comparative Anatomy of the Vertebrates
ZOOL 430  (4) Comparative Animal Behavior
ZOOL 476  (4) Principles of Animal Development

**Vertebrate Diversity [take one course]**

ZOOL 314  (5) Invertebrate Zoology
ZOOL 316  (3) Freshwater Aquatic Invertebrates
ZOOL 358  (4) General Entomology

**Invertebrate Diversity [take one course]**

FISH 310  (4) Ichthyology
WLDFF 355  (3) Ornithology I
ZOOL 354  (4) Herpetology
ZOOL 356  (3) Mammalogy

**Upper Division Life Sciences Electives**

Take two courses, totaling at least five units, chosen in consultation with your advisor. Possible courses include:

- Any Animal Structure & Function; Invertebrate or Vertebrate Diversity course listed above, if not already taken.

**PHYSICS**

PHYS 107  (4) College Physics: Electromagnetism & Modern Physics, or
PHYS 118  (1) College Physics: Biological Applications
STAT 109  (4) Introductory Biostatistics
ZOOL 110  (4) Introductory Zoology

**Zoology**

ZOOL 305  (4-5) Animal Ecology
ZOOL 499  (1-2) Directed Study
<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CHEM 438</td>
<td>Biochemistry</td>
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<tr>
<td>FISH 380</td>
<td>Techniques in Fishery Biology</td>
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<tr>
<td>FISH 434</td>
<td>Ecology of Freshwater Fish</td>
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<tr>
<td>FISH 435</td>
<td>Ecology of Marine Fish</td>
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<tr>
<td>FISH 471</td>
<td>Fish Disease</td>
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<td>FISH 474</td>
<td>Conservation Genetics of Fish and Wildlife</td>
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<tr>
<td>WLDF 450</td>
<td>Principles of Wildlife Diseases</td>
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<td>WLDF 460</td>
<td>Conservation Biology</td>
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<tr>
<td>ZOOL 325</td>
<td>Advanced Behavioral Neuroscience</td>
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<td>ZOOL 530</td>
<td>Benthic Ecology</td>
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<td>ZOOL 552</td>
<td>Advanced Invertebrate Zoology</td>
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<td>ZOOL 556</td>
<td>Marine Mammalogy</td>
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<tr>
<td>ZOOL 560</td>
<td>Advanced Mammalogy</td>
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**REQUIREMENTS FOR THE MINOR**

- ZOOL 110 [4] Introductory Zoology

Plus 14 units of upper division zoology courses approved by the zoology minor advisor: