

# ZOOLOGY

## Bachelor of Science degree with a major in Zoology

### Minor in Zoology

## Master of Science degree in Biology (see Biology)

### Department Chair

Bruce O'Gara, Ph.D.

### Department of Biological Sciences

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### 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. 66-80, and "The Master's Degree" section of the catalog, pp. 81-83.*

#### Lower Division

BIOL 105	(4) Principles of Biology
BOT 105	(4) General Botany
CHEM 109	(5) General Chemistry I
CHEM 110	(5) General Chemistry II
MATH 105	(3) Calculus for the Biological Sciences & NR [or MATH 109]
PHYX 106	(4) College Physics: Mechanics & Heat
PHYX 118	(1) College Physics: Biological Applications

STAT 109	(4) Introductory Biostatistics
ZOOL 110	(4) Introductory Zoology

#### Upper Division

BIOL 307	(4) Evolution
BIOL 330	(4) Principles of Ecology
BIOL 340	(4) Genetics
BIOL 412	(4) General Bacteriology, <b>or</b>
BIOL 433/433D (3/1)	Microbial Ecology
CHEM 328	(4) Brief Organic Chemistry
ZOOL 310	(4) Animal Physiology
ZOOL 314	(5) Invertebrate Zoology
ZOOL 370	(4) Comparative Anatomy of the Vertebrates, <b>or</b>
ZOOL 476	(4) Principles of Animal Development

One course from:

FISH 310	(4) Ichthyology
WLDF 365	(3) Ornithology I
ZOOL 354	(4) Herpetology
ZOOL 356	(3) Mammalogy
ZOOL 358	(4) General Entomology
ZOOL 430	(4) Comparative Animal Behavior

One upper division course in botany with laboratory.

### REQUIREMENTS FOR THE MINOR

BIOL 105	(4) Principles of Biology
ZOOL 110	(4) Introductory Zoology

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

