

# EVOLUTION, ECOLOGY & BIODIVERSITY, BACHELOR OF SCIENCE

## College of Biological Sciences

The major in Evolution, Ecology & Biodiversity offers the student a broad background in the theoretical and empirical basis of our understanding of the diversity and distribution of living organisms.

## The Program

The program of study for the major begins with a core of introductory courses in mathematics, physical sciences, and biology. These are followed by survey courses in biodiversity, evolution and ecology and various more specialized courses that focus the student on particular disciplines or organisms, with an emphasis on problem-solving and critical thinking. Evolution, Ecology & Biodiversity majors may earn either a Bachelor of Science or a Bachelor of Arts degree. The requirements for the B.S. degree program include more science courses, such as biochemistry, whereas those for the A.B. degree program allow room for more electives within the humanities and social sciences. The A.B. degree is especially appropriate for those students who wish to combine arts or languages with evolution and ecology for career preparation in such areas as scientific writing, translating or illustration.

## Career Alternatives

A degree in Evolution, Ecology & Biodiversity prepares the student for career opportunities in research, teaching, health professions, veterinary medicine, agriculture, environmental management, and industry. Many students gain some research experience while at UC Davis and choose to continue their training at the graduate level. This track offers careers in academics, government, environmental organizations, or business.

## Teaching Credential Subject Representative

Students planning for a teaching career should consult the School of Education in regards to preparation for certification; see the Teaching Credential/M.A. Program (<https://education.ucdavis.edu/teaching-credentialma/>).

## Faculty Advisor

Laci M. Gerhart, Ph.D.

## Advising

Biology Academic Success Center (BASC) (<http://basc.ucdavis.edu/>) in 1023 Katherine Esau Science Hall (formerly Sciences Laboratory Building); 530-752-0410.

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum number of units required for the Evolution, Ecology & Biodiversity Bachelor of Science is 79.

Code	Title	Units
<b>Preparatory Subject Matter</b>		
<i>Biological Science</i>		15

BIS 002A & BIS 002B & BIS 002C	Introduction to Biology: Essentials of Life on Earth and Introduction to Biology: Principles of Ecology & Evolution and Introduction to Biology: Biodiversity & the Tree of Life
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<i>Chemistry</i>		
Choose CHE 002 series or CHE 004 series: <sup>1</sup>		15
CHE 002A & CHE 002B & CHE 002C	General Chemistry and General Chemistry and General Chemistry	
CHE 004A & CHE 004B & CHE 004C	General Chemistry for the Physical Sciences & Engineering and General Chemistry for the Physical Sciences & Engineering and General Chemistry for the Physical Sciences & Engineering	
Choose CHE 008 series or CHE 118 series: <sup>2</sup>		6-12
CHE 008A & CHE 008B	Organic Chemistry: Brief Course and Organic Chemistry: Brief Course	
<b>OR</b>		
CHE 118A & CHE 118B & CHE 118C	Organic Chemistry for Health & Life Sciences and Organic Chemistry for Health & Life Sciences and Organic Chemistry for Health & Life Sciences	
<i>Mathematics</i>		
Choose MAT 017 series or MAT 021 series: <sup>3</sup>		8-12
MAT 017A & MAT 017B & MAT 017C	Calculus for Biology & Medicine and Calculus for Biology & Medicine and Calculus for Biology & Medicine	
<b>OR</b>		
MAT 021A & MAT 021B & MAT 021C	Calculus and Calculus and Calculus (Recommended)	
<i>Physics</i> <sup>4</sup>		12
PHY 007A & PHY 007B & PHY 007C	General Physics and General Physics and General Physics	
Preparatory Subject Matter Subtotal		56-66
<b>Depth Subject Matter</b>		
<i>Biological Science</i>		
BIS 101 or BIS 101V	Genes & Gene Expression Genes & Gene Expression	4
BIS 104	Cell Biology	3
BIS 105 or BIS 102 & BIS 103	Biomolecules & Metabolism Structure & Function of Biomolecules and Bioenergetics & Metabolism	3-6
<i>Evolution &amp; Ecology</i>		
EVE 100	Introduction to Evolution	4
EVE 101	Introduction to Ecology	4
<i>Statistics</i>		
STA 100 or STA 130A & STA 130B	Applied Statistics for Biological Sciences Mathematical Statistics: Brief Course and Mathematical Statistics: Brief Course	4-8

**Areas of Study**

Choose additional upper division restricted electives in biological science relevant to the student's interest chosen in consultation with a BASC advisor to achieve a total of 49 or more units, at least one of the courses taken to fulfill these requirements must include a 6 hour per week laboratory or field component or two courses with a 3 hour per week laboratory or field component.

Include at least one course from the Biodiversity area of study and two courses from the Advanced Evolution & Ecology areas of study below.

(1) Biodiversity (p. 2)

(2) Advanced Evolution & Ecology (p. 2)

Note: A maximum of 4 units of variable-unit courses (numbered 192, 198, 199) may be applied to upper division elective unit requirements, but not to the upper division laboratory requirement. Courses numbered 197T are not applicable to the upper division elective unit requirement.

Depth Subject Matter Subtotal	42-56
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<b>Total Units</b>	<b>98-122</b>
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1

With BASC advisor approval, these combinations also satisfy the Chemistry requirement: CHE 004A-CHE 002A-CHE 002B-CHE 002C; OR CHE 004A-CHE 004B-CHE 002C

2

With BASC advisor approval, this combination also satisfies the Organic Chemistry requirement: CHE 118A-CHE 008B.

3

With BASC advisor approval, this combination also satisfies the Mathematics requirement: MAT 021A-MAT 017B-MAT 017C; OR MAT 017A-MAT 021B

4

With BASC advisor approval, these combinations also satisfy the Physics requirement: PHY 007A (<https://catalog.ucdavis.edu/search/?P=PHY%20007A>)-PHY 007C (<https://catalog.ucdavis.edu/search/?P=PHY%20007C>)-PHY 009A (<https://catalog.ucdavis.edu/search/?P=PHY%20009A>)-PHY 049 (<https://catalog.ucdavis.edu/search/?P=PHY%20049>)\*; PHY 007C (<https://catalog.ucdavis.edu/search/?P=PHY%20007C>)-PHY 009A (<https://catalog.ucdavis.edu/search/?P=PHY%20009A>)-PHY 049 (<https://catalog.ucdavis.edu/search/?P=PHY%20049>)\*. \*PHY 049 (<https://catalog.ucdavis.edu/search/?P=PHY%20049>) will require approval from the Physics Department to enroll.

## (1) Biodiversity Area of Study

Code	Title	Units
ENT 107	California Insect Diversity	5
EVE 105	Phylogenetic Analysis of Vertebrate Structure	4
EVE/PLB 108	(Discontinued)	5
EVE 112	Biology of Invertebrates	3
EVE 114	Experimental Invertebrate Biology	3
EVE 140	Paleobotany	4
MIC 105	Microbial Diversity	3
NEM 110	Introduction to Nematology	2
PLB/PLS 116	Plant Morphology & Evolution	5
PLB/PLP 148	Introductory Mycology	4

PLS 147	California Plant Communities	3
WFC 110	Biology & Conservation of Wild Mammals	3
WFC 111	Biology & Conservation of Wild Birds	3
WFC 120	Biology & Conservation of Fishes	3
WFC 134	Herpetology	3

## (2) Advanced Evolution & Ecology Area of Study

Code	Title	Units
EVE 102	Population & Quantitative Genetics	4
EVE 103	Phylogeny, Speciation & Macroevolution	4
EVE 104	Community Ecology	4
EVE 106	Mechanical Design in Organisms	3
EVE 107	Animal Communication	4
EVE 110	Running, Swimming & Flying	3
EVE 115	Marine Ecology	4
EVE/PLB 117	Plant Ecology	4
EVE/PLB 119	Population Biology of Invasive Plants & Weeds	3
EVE 120	Global Change Ecology	3
EVE 131	Human Genetic Variation & Evolution	3
EVE 138	Ecology of Tropical Latitudes	5
EVE 141	Principles of Systematics	3
EVE 147	Biogeography	4
EVE 149	Evolution of Ecological Systems	4
EVE 150	Evolution of Animal Development	3
EVE 161	Microbial Phylogenomics; Genomic Perspectives on the Diversity & Diversification of Microbes	3
EVE 175	Computational Genetics	3
Choose EVE 180A or ENT 180A & EVE 180B or ENT 180B:		8
EVE/ENT 180A	Experimental Ecology & Evolution in the Field	
EVE/ENT 180B	Experimental Ecology & Evolution in the Field	
EVE 181	Ecology & Evolution of Animal-Plant Interactions	4