

# BIOLOGICAL SCIENCES, BACHELOR OF ARTS

## College of Biological Sciences

Departments of Evolution & Ecology; Microbiology & Molecular Genetics; Molecular & Cellular Biology; Neurobiology, Physiology, & Behavior; and Plant Biology

## The Program

The Biological Sciences major is broad in concept, spanning the numerous core disciplines of biology. The Bachelor of Arts (A.B.) program includes preparatory work in mathematics, general and organic chemistry, physics, and introductory level biology, as well as upper division core classes emphasizing the breadth of biological sciences. Students in the Bachelor of Arts (A.B.) program can pursue upper division coursework outside of the biological sciences. Research and internships are encouraged.

## Career Alternatives

The degree program prepares students for admission to graduate schools or professional schools, leading to either a variety of professional health careers or further study in basic and applied areas of biology. They provide suitable preparation for careers in teaching, biological and biotechnological research with various governmental agencies or private companies, government regulatory agencies, environmental consulting, biological illustration and writing, pharmaceutical sales, biological/environmental law, and biomedical engineering.

## Faculty Advisor

Lesilee Rose, 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.

## Teaching Credential Subject Representative

Associate Director of Teacher Education (School of Education); see the Teaching Credential/M.A. Program (<https://education.ucdavis.edu/teaching-credentialma/>).

## Bodega Marine Laboratory Program

Students interested in Marine Biology should visit Marine & Coastal Science Major (<https://catalog.ucdavis.edu/departments-programs-degrees/earth-planetary-sciences/marine-coastal-science-bs/>) & Bodega Marine Laboratory (<http://bml.ucdavis.edu/>).

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 Biological Sciences Bachelor of Arts is 76.

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

|                                      |  |
|--------------------------------------|--|
| BIS 002A<br>& BIS 002B<br>& BIS 002C | Introduction to Biology: Essentials of Life on Earth<br>and Introduction to Biology: Principles of Ecology & Evolution<br>and Introduction to Biology: Biodiversity & the Tree of Life |
|--------------------------------------|--|

### Chemistry

Choose the 002 or 004 series: <sup>1</sup> 10

|                        |  |
|------------------------|--|
| CHE 002A<br>& CHE 002B | General Chemistry<br>and General Chemistry   |
| CHE 004A<br>& CHE 004B | General Chemistry for the Physical<br>Sciences & Engineering<br>and General Chemistry for the Physical<br>Sciences & Engineering |

### Choose the 008 or 118 series: <sup>2</sup> 6-12

|                                      |   |
|--------------------------------------|---|
| CHE 008A<br>& CHE 008B               | Organic Chemistry: Brief Course<br>and Organic Chemistry: Brief Course  |
| CHE 118A<br>& CHE 118B<br>& CHE 118C | Organic Chemistry for Health & Life<br>Sciences<br>and Organic Chemistry for Health & Life<br>Sciences<br>and Organic Chemistry for Health & Life<br>Sciences |

### Mathematics

Choose the 017 or 021 series: <sup>3</sup> 8

|                        |  |
|------------------------|--|
| MAT 017A<br>& MAT 017B | Calculus for Biology & Medicine<br>and Calculus for Biology & Medicine |
| MAT 021A<br>& MAT 021B | Calculus<br>and Calculus   |

### Physics

Choose the 001 or 007 series: 6-12

|                                      |   |
|--------------------------------------|---|
| PHY 001A<br>& PHY 001B               | Principles of Physics<br>and Principles of Physics            |
| PHY 007A<br>& PHY 007B<br>& PHY 007C | General Physics<br>and General Physics<br>and General Physics |

### Recommended

#### Chemistry

|                         |  |
|-------------------------|--|
| CHE 002C<br>or CHE 004C | General Chemistry<br>General Chemistry for the Physical Sciences & Engineering |
|-------------------------|--|

|                         |   |
|-------------------------|---|
| <b>Mathematics</b>      |   |
| MAT 017C<br>or MAT 021C | Calculus for Biology & Medicine<br>Calculus |

Preparatory Subject Matter Subtotal 45-57

### Depth Subject Matter

#### Biological Science

|                                    |   |     |
|------------------------------------|---|-----|
| BIS 101                            | Genes & Gene Expression   | 4   |
| BIS 105<br>or BIS 102<br>& BIS 103 | Biomolecules & Metabolism<br>Structure & Function of Biomolecules<br>and Bioenergetics & Metabolism | 3-6 |

|                                      |  |   |
|--------------------------------------|--|---|
| <b>Statistics</b>                    |  |   |
| STA 100<br>or STA 013<br>or STA 013Y | Applied Statistics for Biological Sciences<br>Elementary Statistics<br>Elementary Statistics | 4 |

#### Evolution

|  |   |     |
|--|---|-----|
| EVE 100  | Introduction to Evolution                     | 4   |
| <i>Ecology</i>   |   |     |
| ESP 100  | General Ecology                               | 4   |
| or EVE 101   | Introduction to Ecology                       |     |
| <i>Microbiology</i>  |   |     |
| Choose one:  |   | 3-4 |
| MIC 102  | Introductory Microbiology                     |     |
| MIC 162  | General Virology (Discontinued)               |     |
| MIC 170  | Yeast Molecular Genetics                      |     |
| <i>Animal Physiology, Behavior or Development</i>  |   |     |
| Choose one:  |   | 3-5 |
| BIS 104  | Cell Biology                                  |     |
| MCB 150  | Developmental Biology                         |     |
| NPB 100  | Neurobiology                                  |     |
| NPB 101  | Systemic Physiology                           |     |
| NPB 102  | Animal Behavior                               |     |
| NPB 107  | Cell Signaling in Health & Disease            |     |
| NPB 141  | (Discontinued)                                |     |
| <i>Plant Physiology or Development:</i>  |   |     |
| Choose one:  |   | 3-5 |
| PLB 105  | Developmental Plant Anatomy                   |     |
| PLB 111  | Plant Physiology                              |     |
| PLB 112  | Plant Growth & Development                    |     |
| PLB 113  | Molecular & Cellular Biology of Plants        |     |
| PLB/PLS 116  | Plant Morphology & Evolution                  |     |
| PLB/MCB 126  | Plant Biochemistry                            |     |
| <i>Laboratory Requirement</i>  |   |     |
| Choose course(s) for a minimum total of six hours/week of laboratory or field work from the list of courses below: |   | 3-5 |
| Choose two with three hours lab or field work/week:  |   |     |
| EVE 110  | Running, Swimming & Flying                    |     |
| EVE 140  | Paleobotany                                   |     |
| EVE/ENT 180A   | Experimental Ecology & Evolution in the Field |     |
| EVE/ENT 180B   | Experimental Ecology & Evolution in the Field |     |
| MCB 185  | Computer Programming for Biologists           |     |
| MIC 103L   | Introductory Microbiology Laboratory          |     |
| NPB 100L   | Neurobiology Laboratory                       |     |
| NPB 101L   | Systemic Physiology Laboratory                |     |
| NPB 121L   | Physiology of Reproduction Laboratory         |     |
| NPB 123/APC 100  | Comparative Vertebrate Organology             |     |
| PLB/EVE 117  | Plant Ecology                                 |     |
| PLB/EVE 119  | Population Biology of Invasive Plants & Weeds |     |
| Other courses with approval of the faculty advisor.  |   |     |
| Choose one with six hours lab or field work/week; a course may fulfill both the lab and a depth topic requirement: |   |     |
| BIS 180L   | Genomics Laboratory                           |     |
| EVE 105  | Phylogenetic Analysis of Vertebrate Structure |     |
| EVE 106  | Mechanical Design in Organisms                |     |
| EVE 112L   | Biology of Invertebrates Laboratory           |     |

|   |   |              |
|---|---|--------------|
| EVE 114   | Experimental Invertebrate Biology           |              |
| EXB 106L/<br>CHA 101L                               | Human Gross Anatomy Laboratory              |              |
| MIC 104L  | General Microbiology Laboratory             |              |
| MIC 105L  | Microbial Diversity Laboratory              |              |
| MCB 120L  | Molecular Biology & Biochemistry Laboratory |              |
| MCB 140L  | Cell Biology Laboratory                     |              |
| MCB 160L  | Principles of Genetics Laboratory           |              |
| NPB 141P  | (Discontinued)                              |              |
| PLB/PLS 102   | (Discontinued)                              |              |
| PLB 105   | Developmental Plant Anatomy                 |              |
| PLB/EVE 108   | (Discontinued)                              |              |
| PLB/PLS 116   | Plant Morphology & Evolution                |              |
| PLB/PLP 148   | Introductory Mycology                       |              |
| Other courses with approval of the Faculty Advisor. |   |              |
| Depth Subject Matter Subtotal                       |   | 31-41        |
| <b>Total Units</b>                                  |   | <b>76-98</b> |

1

With BASC advisor approval, this combination also satisfies the Chemistry requirement: CHE 004A-CHE 002A (3 units w/no lab)-CHE 002B.

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 017A-MAT 021B.