

# BIOLOGY

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The Creighton Biology Department offers foundational and advanced courses across major subdisciplines of biology. Lecture and lab experiences are grounded in first principles. Modern facilities, faculty active in research and a commitment to mentoring students all contribute to a rich environment for developing a sound foundation in life science and opportunities to participate in original research.

## Biology

### Specific Requirements for Admission to the Biology Major

- Completion of BIO 201 General Biology: Organismal and Population and BIO 202 General Biology: Cellular and Molecular with a grade of "C" or better in each, OR completion of one Biology lecture course at Creighton, 300-level or above, with a grade of "C" or better.

### B.S., Major in Biology requirements: 33 credits

Code	Title	Credits
BIO 201 & BIO 205	General Biology: Organismal and Population and General Biology: Organismal and Population Laboratory	4
BIO 202 & BIO 206	General Biology: Cellular and Molecular and General Biology: Cellular and Molecular Laboratory	4

#### Upper Division Biology courses

Seven upper-division lecture courses in the major, which consists of 300-level and above BIO courses of three or more credits, except BIO 297, BIO 350, BIO 397, BIO 493, BIO 495 and BIO 497. These courses must include:

Five lecture courses at the 300- and/or 400-level, which must include at least one course from each of the following three areas:

#### Molecular/Cellular:

BIO 317	Genetics
BIO 362	Cell Structure and Function
BIO 432	Immunology
BIO 452	Microbiology
BIO 462	Neurobiology
BIO 464	Neurobiology of Disease
BIO 467	Developmental Biology

#### Organismal:

BIO 335	Zoology
BIO 341	Botany
BIO 371	Animal Behavior
BIO 433	Vertebrate Comparative Anatomy
BIO 439	Parasitology
BIO 449	Physiology
BIO 461	Entomology
BIO 462	Neurobiology
BIO 467	Developmental Biology

#### Population/Ecology/Evolution:

BIO 315	Foundations of Ecology & Evolution
BIO 383	Vertebrate Natural History

BIO 415	Evolution
BIO 439	Parasitology
BIO 471	Conservation Biology
BIO 481	Terrestrial Ecology
BIO 485	Aquatic Ecology

#### One 500-level "focus" course

Applicable courses are:

BIO 501	Bioinformatics
BIO 517	Current Topics in Genetics
BIO 520	Genomes and Chromosomes
BIO 532	Current Topics in Cellular and Molecular Biology
BIO 539	Ecology of Zoonotic Diseases
BIO 541	Current Topics in Plant Biology
BIO 545	Plant Diversity and Evolution
BIO 549	Environmental Physiology
BIO 559	Current Topics in Physiology
BIO 567	Current Topics in Neuroscience
BIO 580	Current Topics in Ecology

One additional course of the student's choice. This course can be any upper-division BIO lecture course (EXCEPT BIO 350) or one of a select group of offerings by other departments. Please check with the Biology department for a list of currently approved courses.

#### Four laboratory courses

This requirement may be satisfied by any combination of 4 credit lecture + laboratory or 1 or 2 credit laboratory-only courses.

Lecture + laboratory courses may apply simultaneously to both the lecture and laboratory requirements.

The following courses apply toward this requirement:

#### Lecture/Laboratory courses

BIO 335	Zoology
BIO 341	Botany
BIO 433	Vertebrate Comparative Anatomy
BIO 439	Parasitology
BIO 461	Entomology
BIO 467	Developmental Biology
BIO 481	Terrestrial Ecology
BIO 520	Genomes and Chromosomes
BIO 545	Plant Diversity and Evolution

#### Laboratory-only courses

BIO 318	Genetics Laboratory
BIO 363	Cell Structure and Function Laboratory
BIO 372	Animal Behavior Laboratory
BIO 384	Vertebrate Natural History Laboratory
BIO 419	Molecular Genetics Laboratory
BIO 450	Physiology Laboratory
BIO 453	Microbiology Laboratory
BIO 463	Neurobiology Laboratory
BIO 486	Freshwater Ecology Laboratory

In addition, one of the following may be used as the equivalent of a laboratory course: BIO 490 may be counted as one lab course if taken twice. BIO 497 may be counted as one lab course if: 1. At least six credits of 497 are taken over multiple semesters. 2. The research work is presented by the student at a regional or national scientific meeting 3. The research work is also presented by the student as a poster at the Department of Biology Research Colloquium.

BIO 297 Directed Research, BIO 350 Fundamentals of Microbiology, BIO 397 Directed Independent Research (Extramural), BIO 492 Seminar in Undergraduate Classroom Instruction, BIO 493 Directed Independent Readings, and BIO 495 Directed Independent Study **do not** apply toward the major requirements. BIO 497 Directed Independent Research may be counted as one lab course as noted above. BIO 490 Seminar In Undergraduate Laboratory Instruction can be applied toward the lab requirement if taken **twice**.

Courses in departments other than Biology (such as CHM 371 Biochemistry of Metabolism ) may be approved for non-laboratory biology major credit; a student may exercise this option for only one such course.

### Required Supporting Courses for a Major in Biology

Code	Title	Credits
CHM 203	General Chemistry I	3
CHM 204	General Chemistry I Laboratory	1
CHM 205	General Chemistry II	3
or CHM 285	Advanced General Chemistry II	
CHM 206	General Chemistry II Laboratory	1
or CHM 286	Chemical and Statistical Analysis Laboratory	
CHM 321	Organic Chemistry I	3
CHM 322	Organic Chemistry I Laboratory	1
CHM 323	Organic Chemistry II	3
CHM 324	Organic Chemistry II Laboratory	1
PHY 201	General Physics for the Life Sciences	3
PHY 202	General Physics for the Life Sciences II	3
PHY 205	General Physics Laboratory I	1
PHY 206	General Physics Laboratory II	1

## Minor in Biology

The Biology minor introduces students to foundational and advanced courses across the major subdisciplines of modern biology. Lecture and lab experiences are grounded on fundamental principles. In addition to the General Biology courses, a diversity of life science topics are available in upper division courses at the cellular and molecular, organismal, and ecological and evolutionary biology levels. Students can design a study plan which allows an in-depth exploration of one area or a broader survey of several sub-disciplinary areas of biology.

### Biology Minor requirements: 18 credits

Code	Title	Credits
BIO 202 & BIO 206	General Biology: Cellular and Molecular and General Biology: Cellular and Molecular Laboratory	4
BIO 201 & BIO 205	General Biology: Organismal and Population and General Biology: Organismal and Population Laboratory	4

Ten additional credit in BIO courses numbered 300 and above. <sup>1</sup> 10

Must include one lecture + laboratory or laboratory-only course.

### Total Credits

18

<sup>1</sup> Courses in departments other than Biology may NOT be applied toward this minor. Additionally, BIO 311, BIO 425, BIO 297, BIO 397, BIO 490, BIO 492, BIO 493, BIO 495 and BIO 497 do NOT apply toward this minor.

## Teacher Certification

Students who plan to teach Biology in secondary schools should consult with the Education Department, the Biology Department, and the appropriate agency in the state in which they intend to teach.