

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 subdisciplinary 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. ¹ 10

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

Total Credits 18

¹ 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.

* Kingfisher concentration requirements are 9 credits total, chosen from the list of courses in the associated minor. Unless otherwise specified.

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.