

# BIOLOGY

Chair: Mark Reedy

Associate Chair: Alistair Cullum

Department Office: Hixson-Lied Science Building, Room 448

Professors: T. Burk, J. Platz, J. Schalles; Professors Emeriti: R. Belknap, H. Nickla, A. Schlesinger;

Associate Professors: A. Cullum, M. Reedy, M. Vinton; Associate Professor Emerita: J. Roberts; Assistant Professors: C. Austerberry, C. Brockhouse, S. Cho, C. Fassbinder-Orth, A. Shibata, K. van Dijk.

**Department Description:** 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.

**Web Contact/Information:** Additional information about this department may be found at <http://biology.creighton.edu/>. However, for definitive details, students are strongly encouraged to check the University's website for Bulletin changes at <http://www.creighton.edu/Registrar>.

## PROGRAMS IN BIOLOGY

**Specific Requirements for Admission to the Biology Major:** Completion of a Creighton BIO course at 200-level or above with a grade of "C" or higher.

### ***B. S., Major in Biology: 33 Credits***

#### *Course Requirements*

#### **(All of the following:)**

BIO 211            General Biology: Molecular And Cellular            4 credits

BIO 212            General Biology: Organismal And Population            4 credits

#### **(Twenty-five additional upper-division BIO credits from the list below:)**

*This upper-division coursework must include the following:*

#### **Seven lecture courses (3 credits or 4 credits)**

*A minimum of four lecture courses from the 300 and/or 400 levels, and two lecture courses from the 500 level. At least one of these seven lecture courses must come from each of three areas: 1. Cellular/Molecular, 2. Organismal, 3. Population/ Ecology/ Evolution. These areas are designated as "Cell," "Org," and "Pop," respectively, in the third column of the course list below.*

#### **Four laboratory courses**

*This requirement may be satisfied by any combination of 4 credit lecture+laboratory or 1 or 2 credit laboratory-only courses. These courses are designated by "Lab" in the course list below. Lecture+laboratory courses may apply simultaneously to both the lecture and laboratory requirements.*

BIO 317	Genetics	Cell	3 credits
BIO 318	Genetics Laboratory	Lab	1 credit
BIO 333	Vertebrate Comparative Anatomy	Lab, Org	4 credits
BIO 335	Zoology	Lab, Org	4 credits
BIO 341	General Botany	Lab, Org	4 credits
BIO 351	Microbiology	Lab, Cell	4 credits
BIO 362	Cell Structure and Function	Cell	3 credits
BIO 385	Ecology, Geography and Health of Lakes	Lab, Pop	4 credits
BIO 390	Environmental Science	Pop	3 credits
BIO 401	Biostatistics	Lab	4 credits
BIO 417	Molecular Biology	Cell	3 credits
BIO 419	Molecular Biology Laboratory	Lab	2 credits
BIO 432	Introduction to Immunology	Cell	3 credits
BIO 435	Coastal and Estuarine Ecology	Lab, Pop	4 credits
BIO 440	Field Biology of the Desert Southwest	Lab, Pop	4 credits
BIO 449	Animal Physiology	Org	3 credits

BIO 450	Animal Physiology Laboratory	Lab	1 credit
BIO 455	Biology of the Protists	Lab, Cell	4 credits
BIO 467	Developmental Biology (Embryology)	Lab, Org	4 credits
BIO 481	Terrestrial Ecology	Lab, Pop	4 credits
BIO 483	Vertebrate Natural History Lecture	Pop	3 credits
BIO 484	Vertebrate Natural History Laboratory	Lab	1 credit
BIO 485	Marine and Freshwater Ecology	Pop	3 credits
BIO 486	Freshwater Ecology Laboratory	Lab	1 credit
BIO 487	Marine Ecology Laboratory	Lab	2 credits
BIO 517	Current Topics in Genetics	Cell	3 credits
BIO 520	Cytogenetics	Lab, Cell	4 credits
BIO 523	Environmental Toxicology	Pop	3 credits
BIO 532	Current Topics in Cell. and Mol. Biology	Cell	3 credits
BIO 539	Ecology of Zoonotic Diseases	Pop	3 credits
BIO 549	Environmental Physiology	Org	3 credits
BIO 551	Current Topics in Microbiology	Cell	3 credits
BIO 559	Special Topics in Physiology	Org	3 credits
BIO 561	Entomology	Lab, Org	4 credits
BIO 562	Neurobiology	Cell, Org	3 credits
BIO 563	Neurobiology Laboratory	Lab	2 credits
BIO 567	Cellular and Developmental Neuroscience	Cell	3 credits
BIO 571	Animal Behavior	Org	3 credits
BIO 572	Animal Behavior Laboratory	Lab	2 credits
BIO 580	Current Topics in Ecology	Pop	3 credits
BIO 581	Evolution	Lab, Pop	4 credits

BIO 493, 495 and 497 do not apply toward the major requirements. BIO 490 can be applied toward the lab requirement if taken twice.

Upon petition prior to enrollment, courses in departments other than Biology (such as CHM 371 or BMS 521) may be approved for non-laboratory biology major credit; a student may exercise this option for only one such course.

**Requisite Courses:** Twenty-four credits in the following courses: CHM 203, 204, 205 (or 285), 206 (or 286), 321, 322, 323, 324; PHY 211, 212.

## BIOLOGY MINOR

**Program Description:** 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 interdisciplinary areas of biology.

**Contact:** Chair, Department of Biology

### (All of the following:)

BIO 211	General Biology: Molecular and Cellular	4 credits
BIO 212	General Biology: Organismal and Population	4 credits
	Ten additional credits in BIO courses numbered 300 and above.	10 credits

The ten additional credits must include at least one lecture-laboratory or laboratory-only course.

Courses in departments other than Biology may not be applied towards this minor

BIO 490, BIO 493, BIO 495, and BIO 497 cannot be applied towards this minor.

*ECOLOGY/ EVOLUTION MINOR*

**Program Description:** The Ecology/Evolution minor provides students with the opportunity to obtain a deeper understanding of the underlying principles that have shaped life forms and life history patterns. Course offerings encompass biodiversity as a major theme and include a wide array of field experiences and opportunities to study plants and animals in a variety of ecosystems: some are within the US; others lie outside US boundaries.

**Contact:** Chair, Department of Biology

**(All of the following:)**

BIO 212	General Biology: Organismal and Population	4 credits
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**(Fourteen credits from the following:)**

BIO 341	General Botany	4 credits
BIO 385	The Ecology, Geography and Health of Lakes	4 credits
BIO 401	Biostatistics	4 credits
BIO 435	Coastal and Estuarine Ecology	4 credits
BIO 440	Field Biology of the Desert Southwest	4 credits
BIO 455	Biology of the Protists	4 credits
BIO 481	Terrestrial Ecology	4 credits
BIO 483	Vertebrate Natural History	3 credits
BIO 484	Vertebrate Natural History Lab	1 credit
BIO 485	Marine and Freshwater Ecology	3 credits
BIO 486	Freshwater Ecology Laboratory	1 credit
BIO 487	Marine Ecology Laboratory	2 credits
BIO 497	Directed Independent Research	1-3 credits
BIO 561	Entomology	4 credits
BIO 581	Evolution	4 credits

***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. PHY 187 and either ATS 113 and 114, EVS 443 or PHY 107 and 108 should be substituted for PHY 211 and 212 as supporting courses.

***Certificate Programs in University College***

This department does not offer a certificate program to students in University College.

***For all BIO courses, please refer to page 334.***