

BIOLOGY, MINOR

This minor may only be completed by students admitted to Elementary Education options leading to certification in K-9 or Middle Childhood through Early Adolescence. A minor is not required to complete the K-9 certification program, but students may elect to complete one.

Minors provide a depth of study in a particular area of interest and also inform classroom instruction. The completion of a minor is required to teach middle school in some states and may benefit students particularly interested in teaching at this level.

Students may wish to consult with a biology undergraduate advisor (<http://biologymajor.wisc.edu/advising/>) to discuss course selection and other issues related to this field of study. The Biology Major website (<http://biologymajor.wisc.edu/>) is also a good resource, providing information about areas of study within biology and upcoming biology-related activities on campus. Biology is offered as a major in both the College of Letters & Science and the College of Agricultural and Life Sciences.

Upon completion, the subject area of the minor will be posted on the UW-Madison transcript. **Students will not receive an additional certification or license in the subject area as was possible prior to fall 2022 program admission.** The Wisconsin Department of Public Instruction does not offer content licenses in association with the K-9 educator license.

HOW TO GET IN

This minor may only be declared by students completing Elementary Education certification in either K-9 or Middle-Childhood-through-Early-Adolescence. The declaration form is located on the School of Education's Undergraduate Admissions page and can be submitted any time after admission into the program.

REQUIREMENTS

The biology minor requires a minimum of 24 credits. A minimum cumulative grade point average of 2.75 is required, based on all biology minor coursework taken on the UW-Madison campus. Biocore sequence coursework may also be used to meet these requirements; consult with an advisor in Education Student Services.

Discipline-related course work is also required, but not calculated into the minor credits or gpa.

REQUIRED DISCIPLINE-RELATED COURSES

Code	Title	Credits
Select a minimum of 6 credits in Mathematics and/or Statistics, college level, excluding MATH 130-MATH 132		
Select one of the following:		5-10
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	

CHEM 115 & CHEM 116	Chemical Principles I and Chemical Principles II	
Select one of the following:		8-10
PHYSICS 103 & PHYSICS 104	General Physics and General Physics	
PHYSICS 201 & PHYSICS 202	General Physics and General Physics	
PHYSICS 207 & PHYSICS 208	General Physics and General Physics	

MINOR REQUIREMENTS

INTRODUCTORY BIOLOGY. SELECT ONE OF THE FOLLOWING OPTIONS:

Code	Title	Credits
Option 1: ¹		
BIOLOGY/ZOOLOGY 101	Animal Biology	3
BIOLOGY/ZOOLOGY 102	Animal Biology Laboratory	2
BIOLOGY/BOTANY 130	General Botany	5
Option 2:		
BIOLOGY/BOTANY/ZOOLOGY 151	Introductory Biology	5
BIOLOGY/BOTANY/ZOOLOGY 152	Introductory Biology	5

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Students earning Advanced Placement (AP) or International Baccalaureate (IB) Biology scores of 4 or above are given credit for BIOLOGY/BOTANY/ZOOLOGY 151 at UW-Madison. This course fulfills the entire 151-152 sequence. Students taking BIOLOGY/BOTANY/ZOOLOGY 151 coursework at UW-Madison or transfer it from another campus must complete both BIOLOGY/BOTANY/ZOOLOGY 151 and BIOLOGY/BOTANY/ZOOLOGY 152 to complete the 151-152 sequence.

GENETICS

Code	Title	Credits
GENETICS 466	Principles of Genetics	3

ELECTIVES

Complete biology elective coursework from the approved lists to reach a minimum of 24 credits. The courses must be numbered 300 and above and include at least one course from two of the following three areas: (1) Ecology, Evolution, Genetics, (2) Cell and Molecular Biology, and (3) Physiology. Additional courses may, with the consent of an advisor, be selected to meet the elective requirements.

Area 1: Ecology/Evolution/Genetics

Code	Title	Credits
AN SCI 610	Quantitative Genetics	3
BOTANY 300	Plant Anatomy ¹	4
BOTANY 305	Plant Morphology and Evolution ¹	4
BOTANY 330	Algae	3
BOTANY/PL PATH 332	Fungi ¹	4
BOTANY 400	Plant Systematics ¹	4

BOTANY 401	Vascular Flora of Wisconsin ¹	4
BOTANY/ F&W ECOL 402	Dendrology: Woody Plant Identification and Ecology ¹	2
BOTANY 403	Field Collections and Identification ¹	1-4
BOTANY 422	Plant Geography	3
BOTANY/ F&W ECOL 455	The Vegetation of Wisconsin ¹	4
BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology ¹	4
BOTANY/ PL PATH 563	Phylogenetic Analysis of Molecular Data	3
ZOOLOGY/ ENTOM 302	Introduction to Entomology ¹	4
ZOOLOGY/ ENVIR ST 315	Limnology-Conservation of Aquatic Resources	2
ZOOLOGY 316	Laboratory for Limnology- Conservation of Aquatic Resources ¹	2-3
ZOOLOGY/ENTOM/ M M & I/PATH- BIO 350	Parasitology	3
ZOOLOGY/ ENVIR ST/ F&W ECOL 360	Extinction of Species	3
ZOOLOGY/ ANTHRO/ BOTANY 410	Evolutionary Biology	3
ZOOLOGY 430	Comparative Anatomy of Vertebrates	5
ZOOLOGY/ BOTANY/ F&W ECOL 460	General Ecology ¹	4
ZOOLOGY/ ENVIR ST 510	Ecology of Fishes	3
ZOOLOGY/ ENVIR ST 511	Ecology of Fishes Lab ¹	2
ZOOLOGY/AN SCI/ F&W ECOL 520	Ornithology	3
ZOOLOGY/AN SCI/ F&W ECOL 521	Birds of Southern Wisconsin ¹	3
ZOOLOGY 525	Tropical Herpetology	1
MICROBIO 607	Advanced Microbial Genetics	3
ENTOM 331	Taxonomy of Mature Insects ¹	4
ENTOM 468	Studies in Field Entomology ¹	3
GENETICS/ MD GENET 565	Human Genetics	3
GENETICS/ BIOCHEM/ MICROBIO 612	Prokaryotic Molecular Biology	3
GENETICS/ BIOCHEM/ MD GENET 620	Eukaryotic Molecular Biology	3
HORT/ AGRONOMY 501	Principles of Plant Breeding	3

LAND ARC/ ENVIR ST 361	Wetlands Ecology ¹	3
PL PATH 300	Introduction to Plant Pathology ¹	4

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Courses are lab or field courses.

Area 2: Cell and Molecular Biology

Code	Title	Credits
MICROBIO 303	Biology of Microorganisms	3
MICROBIO 607	Advanced Microbial Genetics	3
M M & I/PATH- BIO 528	Immunology	3
BOTANY/ PL PATH 563	Phylogenetic Analysis of Molecular Data	3
PL PATH/ ONCOLOGY 640	General Virology-Multiplication of Viruses	3
GENETICS/ BIOCHEM/ MICROBIO 612	Prokaryotic Molecular Biology	3
ZOOLOGY 430	Comparative Anatomy of Vertebrates	5
ZOOLOGY 570	Cell Biology	3

Area 3: Physiology

Code	Title	Credits
BOTANY 500	Plant Physiology	3-4
ZOOLOGY 611	Comparative and Evolutionary Physiology	3
ZOOLOGY 612	Comparative Physiology Laboratory ¹	2
ANAT&PHY 335	Physiology ¹	5

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Courses are lab or field courses.