

BIOLOGY B.S. - FIELD ECOLOGY

General Degree Requirements

To earn a baccalaureate degree, all students must complete successfully, in addition to any other requirements, the University of Montana General Education Requirements. Please refer to the General Education Requirements page (<https://catalog.umt.edu/academics/general-education-requirements/>) for more information.

Additional requirements for graduation can be found on the Degree/Certificate Requirements for Graduation page (<https://catalog.umt.edu/academics/graduation-requirements/>).

Unless otherwise noted in individual program requirements, a minimum grade point average of 2.00 in all work attempted at the University of Montana-Missoula is required for graduation. Please see the Academic Policies and Procedures page (<https://catalog.umt.edu/academics/policies-procedures/>) for information on how your GPA is calculated.

Courses taken to satisfy the requirements of a major, minor, or certificate program must be completed with a grade of C- or better unless a higher grade is noted in the program requirements.

BACHELOR OF SCIENCE - BIOLOGY; FIELD ECOLOGY CONCENTRATION

The Field Ecology Concentration is for students interested in field-based ecology. Students with this concentration spend one or two summers taking field courses at the Flathead Lake Biological Station (<http://flbs.umt.edu/>). This concentration is a graduate prep program, and is for students interested in academia or employment at a governmental, private, or non-profit agency.

Course Requirements

Code	Title	Hours
Biology/Microbiology Lower-Division Core		
Complete all of the following courses:		
BIOB 160	Principles of Living Systems	3
BIOB 161N	Principles of Living Systems Lab	1
BIOB 170N	Principles of Biological Diversity	3
BIOB 171N	Principles of Biological Diversity Lab	2
BIOB 260	Cellular and Molecular Biology	4
BIOB 272	Genetics and Evolution	4
Upper-Division Core Courses Required for the Field Ecology Concentration		
Complete one of the following courses:		5
BIOE 342	Field Ecology	
BIOE 370 & BIOE 371	General Ecology and General Ecology Lab (equivalent to 271)	

Additional Upper-Division Major Courses Required for the Field Ecology Concentration

Complete a minimum of 8 credits of upper-division Biology or Microbiology (BIOB, BIOE, BIOH, BIOL, BIOM, or BIOO), with at least one course from each of the following subcategories. 8 total credits required.

Evolution Course Requirement

Complete at least one evolutionary biology course from the following list:

BIOB 480	Conservation Genetics
BIOB 483	Phylogenics and Evolution
BIOB 486	Genomics
BIOE 406	Behavior & Evolution
BIOE 485	Plant Evolution
BIOM 420	Host-Microbe Interactions

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Complete one of the following courses:

BIOM 360 & BIOM 361	General Microbiology and General Microbiology Lab
BIOM 427 & BIOM 428	General Parasitology and General Parasitology Lab
BIOO 320	General Botany
BIOO 335	Rocky Mountain Flora
BIOO 340	Biology and Management of Fishes
BIOO 462	Entomology
BIOO 470	Ornithology
BIOO 475	Mammalogy

Ecology Requirement at the Flathead Lake Biological Station

Complete either the Aquatic Emphasis or the Terrestrial Emphasis. 13

Aquatic Emphasis

Complete all of the following courses:

BIOE 440	Conservation Ecology
BIOE 451	Landscape Ecology
BIOB 494	Seminar in Biology

Complete 2 of the following courses:

BIOE 400	Aquatic Microbial Ecology
BIOE 439	Stream Ecology
BIOE 453	Lake Ecology

Terrestrial Emphasis

Complete all of the following courses:

BIOE 416	Alpine Ecology
BIOE 440	Conservation Ecology
BIOE 451	Landscape Ecology
BIOE 458	Forest and Fire Ecology
BIOB 494	Seminar in Biology

Mathematics - Calculus

Complete one of the following courses: 4

M 162	Applied Calculus
M 171	Calculus I

Mathematics - Statistics

Complete either one semester or a full year of statistics from the following: 4-8

One Semester:

STAT 216	Introduction to Statistics
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Full Year:

STAT 451 & STAT 452	Statistical Methods I and Statistical Methods II
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STAT 457 Computer Data Analysis I
& STAT 458 and Computer Data Analysis II

Chemistry²

Complete one of the following sequences of general and organic chemistry: 10-20

Introductory Chemistry (10 credits):

CHMY 121N Introduction to General Chemistry

CHMY 123 Introduction to Organic and Biochemistry
& CHMY 124 and Introduction to Organic and
Biochemistry Lab

Advanced Chemistry (20 credits):

CHMY 141N College Chemistry I
& CHMY 142N and College Chemistry I Lab

CHMY 143N College Chemistry II
& CHMY 144N and College Chemistry II Lab

CHMY 221 Organic Chemistry I
& CHMY 222 and Organic Chemistry I Lab

CHMY 223 Organic Chemistry II
& CHMY 224 and Organic Chemistry II Lab

Physics

Complete one of the following Physics sequences: 10

Algebra- and Trigonometry-based Physics:

PHSX 205N College Physics I
& PHSX 206N and College Physics I Laboratory

PHSX 207N College Physics II
& PHSX 208N and College Physics II Laboratory

Calculus-based Physics:

PHSX 215N Fundamentals of Physics with Calculus I
& PHSX 216N and Physics Laboratory I with Calculus

PHSX 217N Fundamentals of Physics with Calculus II
& PHSX 218N and Physics Laboratory II with Calculus

Advanced Writing Requirement

To complete the Advanced Writing Requirement, Biology students take 2 or 3 partial writing courses (either three 1/3 writing courses or one 1/3 writing course and one 2/3 writing course) or one complete writing course. The Field Ecology concentration requires BIOE 371 or BIOE 342 (both 2/3 writing courses). The Advanced Writing Requirement is completed with one additional course, chosen from any of the courses listed below. 3

Total Hours 74-88

1

The lower-division core should be completed before attempting most upper-division major courses. AP Biology credit with a score of 3 may be substituted for either BIOB 160/BIOB 161N or BIOB 170N/BIOB 171N.

2

Students who begin in the advanced chemistry sequence may substitute those courses for introductory sequence courses at the discretion of the major advisor.

Advanced Writing Distributed Model Courses for Biological Sciences

Code	Title	Hours
1/3 Advanced Writing Courses		
BCH 482	Advanced Biochemistry II	3

BIOB 410	Immunology	3
BIOB 425	Advanced Cellular & Molecular Biology	3
BIOB 483	Phylogenics and Evolution	3
BIOE 403	Comparative Vertebrate Anatomy	4
BIOE 428	Freshwater Ecology	0,5
BIOM 402	Pathogenic Microbes	3
BIOO 320	General Botany	5
BIOO 434	Plant Physiology Lab	1
BIOO 470	Ornithology	4
BIOO 475	Mammalogy	4

2/3 Advanced Writing Courses

BCH 486	Biochemistry Research Lab	3
BCH 499	Senior Thesis/Capstone	3-6
BIOB 411	Immunology Laboratory	2
BIOB 499	Undergraduate Thesis	3-6
BIOE 342	Field Ecology	5
BIOE 371	General Ecology Lab (equivalent to 271)	2
BIOM 411	Experimental Microbial Genetics Lab	1
BIOM 499	Undergraduate Thesis	3-6

Complete Advanced Writing Course

BIOH 462	Principles of Medical Physiology	3
BIOM 420	Host-Microbe Interactions	3