FIELD ECOLOGY

Bachelor of Science - Biology; Field Ecology Concentration

College Humanities & Sciences

Degree Specific Credits: 69
Required Cumulative GPA: 2.0
Catalog Year: 2017-2018

Note: 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.

General Education Requirements

Information regarding these requirements can be found in the General Education Section (http://catalog.umt.edu/academics/general-education-requirements) of the catalog.

Summary

Biology/Microbiology Lower Division Core 17
Upper Division Core Courses Required for the Field Ecology Concentration 5
Additional Upper Division Major Courses Required for the Field Ecology Concentration 8
Evolution Course Requirement 3
-Ology Course Requirement 3-5
Ecology Requirement at the Flathead Lake Biological Station 13
Aquatic Emphasis
Terrestrial Emphasis
Required Courses Outside of the Major 26-42
Chemistry
Physics
Upper Division Writing Expectations for the Major 8-13
Total Hours 77-98

Biology/Microbiology Lower Division Core

Rule: All of the following courses are required.

Note: The lower division core should be completed before attempting most upper division major courses.

AP Biology credit may be substituted for either BIOB 160N/BIOB 161N or BIOB 170N/BIOB 171N.

BIOB 160N Principles of Living Systems 3
BIOB 161N Prncpls of Living Systems Lab 1
BIOB 170N Principles Biological Diversity 3
BIOB 171N Prncpls Biological Dvrsty Lab 2

Upper Division Core Courses Required for the Field Ecology Concentration

Select one of the following: 5
BIOE 342 Field Ecology (at Flathead Lake Biological Station)
BIOE 370 & BIEO 371 General Ecology and Gen Ecology Lab (equiv to 271)
Total Hours 5
Minimum Required Grade: C-

Additional Upper Division Major Courses Required for the Field Ecology Concentration

Rule: Complete a minimum of 8 credits of Upper Division Biology or Microbiology, with at least one course from each subcategory

Minimum Required Grade: C-

8 Total Credits Required

Evolution Course Requirement

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

Select at least one of the following: 3
BIOB 480 Conservation Genetics
BIOB 483 Phyllogenics and Evolution
BIOB 486 Genomics
BIEO 406 Behavior & Evolution
BIOL 484 Plant Evolution
Total Hours 3
Minimum Required Grade: C-

-Ology Course Requirement

Select at least one of the following: 3-5
BIOM 360 & BIOM 361 General Microbiology and General Microbiology Lab (equiv to 260)
BIOM 427 & BIOM 428 General Parasitology and General Parasitology Lab
BIOO 320 General Botany
BIOO 335 Rocky Mountain Flora
BIOO 340 Biology and Mgmnt of Fishes
BIOO 462 Entomology
BIOO 470 Ornithology
BIOO 475 Mammalogy
Total Hours 3-5
Minimum Required Grade: C-
Ecology Requirement at the Flathead Lake Biological Station

**Rule:** Complete either the Aquatic Emphasis or the Terrestrial Emphasis

Minimum Required Grade: C-

### Aquatic Emphasis

**Rule:** All of the following courses are required for the Aquatic Emphasis

- BIOE 439 Stream Ecology 3
- BIOE 440 Conservation Ecology 3
- BIOE 451 Landscape Ecology 3
- BIOE 453 Ecology of Small & Large Lakes 3
- BIOL 492 Seminars in Ecol & Res Man 1

Total Hours: 13

Minimum Required Grade: C-

### Terrestrial Emphasis

**Rule:** All of the following courses are required for the Terrestrial Emphasis

- BIOE 416 Alpine Ecology 3
- BIOE 440 Conservation Ecology 3
- BIOE 451 Landscape Ecology 3
- BIOE 458 Forest and Grassland Ecol 3
- BIOL 492 Seminars in Ecol & Res Man 1

Total Hours: 13

Minimum Required Grade: C-

### Required Courses Outside of the Major

Minimum Required Grade: C-

#### Mathematics - Calculus

**Rule:** Required

- M 162 Applied Calculus 4
  or M 171 Calculus I

Total Hours: 4

Minimum Required Grade: C-

#### Mathematics - Statistics

Select either one semester or a full year of statistics from the following:

**One Semester:**
- STAT 216 Introduction to Statistics

**Full Year:**
- STAT 451 Statistical Methods I
  & STAT 452 and Statistical Methods II
- STAT 457 Computer Data Analysis I
  & STAT 458 and Computer Data Analysis II

Total Hours: 4-8

Minimum Required Grade: C-

#### Chemistry

Select either one or two years of chemistry from the following:

**One Year:**
- CHMY 121N Introduction to General Chemistry
  & CHMY 124 and Introduction to Organic and Biochemistry Lab

**Two Years:**
- CHMY 141N College Chemistry I
  & CHMY 144N 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

Total Hours: 8-20

Minimum Required Grade: C-

### Advanced College Writing Requirement

**Rule:** Complete the equivalent of a full writing course (either three 1/3 writing courses or one 2/3 writing course + one 1/3 writing course or one complete writing course)

**Note:** To meet the Advanced College 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 College Writing Requirement is completed with one additional course, chosen from any of the following.

Minimum Required Grade: C-

#### 1/3 Advanced Writing Courses

- BCH 482 Advanced Biochemistry II 3
- BIOB 110 Immunology 3
- BIOB 425 Adv Cell & Molecular Biology 3
- BIOB 483 Phylogenics and Evolution 3
- BIOE 403 Vert Design & Evolution 5
- BIOE 409 Behavior & Evolution Discussion 1
- BIOE 428 Freshwater Ecology 5
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 484</td>
<td>Plant Evolution</td>
<td>3</td>
</tr>
<tr>
<td>BIOM 402</td>
<td>Medical Bacteriology &amp; Mycology</td>
<td>3</td>
</tr>
<tr>
<td>BIOO 320</td>
<td>General Botany</td>
<td>5</td>
</tr>
<tr>
<td>BIOO 434</td>
<td>Plant Physiology Lab</td>
<td>1</td>
</tr>
<tr>
<td>BIOO 470</td>
<td>Ornithology</td>
<td>4</td>
</tr>
<tr>
<td>BIOO 475</td>
<td>Mammalogy</td>
<td>4</td>
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Minimum Required Grade: C-

**2/3 Advanced Writing Courses**

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>BCH 486</td>
<td>Biochemistry Research Lab</td>
<td>3</td>
</tr>
<tr>
<td>BCH 499</td>
<td>Senior Thesis/Capstone</td>
<td>3-6</td>
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<tr>
<td>BIOB 411</td>
<td>Immunology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BIOB 499</td>
<td>Undergraduate Thesis</td>
<td>3-6</td>
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<tr>
<td>BIOE 342</td>
<td>Field Ecology</td>
<td>5</td>
</tr>
<tr>
<td>BIOE 371</td>
<td>Gen Ecology Lab (equiv to 271)</td>
<td>2</td>
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<tr>
<td>BIOM 411</td>
<td>Exprmntl Microbial Genetic Lab</td>
<td>1</td>
</tr>
<tr>
<td>BIOM 499</td>
<td>Undergraduate Thesis</td>
<td>3-6</td>
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Minimum Required Grade: C-

**Complete Advanced Writing Course**

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<tbody>
<tr>
<td>BIOH 462</td>
<td>Principles Medical Physiology</td>
<td>3</td>
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**Exception to the Modern/Classical Languages Requirement**

**Rule:** Choose one of the following Math courses

**Note:** The Division of Biological Sciences has been granted an exception to the Modern/Classical Language Requirement. Either of these Calculus courses (required by the major) will satisfy this requirement.

<table>
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<tbody>
<tr>
<td>M 162</td>
<td>Applied Calculus</td>
<td>4</td>
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<tr>
<td>or M 171</td>
<td>Calculus I</td>
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Total Hours: 4

Minimum Required Grade: C-