The major in Ecosystem Science and Restoration prepares students to understand how ecosystems work to solve pressing environmental problems or help restore degraded ecosystems. Students can select one of two options:

- the terrestrial concentration, which focuses on the understanding and repair of terrestrial ecosystems; and
- the aquatic concentration, which focuses on aquatic ecosystem function and watershed restoration.

Students engage in field-based learning, contribute to cutting-edge restoration or ecosystem science projects, and are challenged to apply ecological theory to restoration practice. The major requires completion of a nine-credit restoration capstone, during which students gain hands-on real-world experience planning and implementing restoration projects in partnership with natural resource management agencies and organizations in western Montana.

A degree in Ecosystem Science and Restoration prepares students for careers as ecologists or restoration practitioners with non-profit, private, or governmental agencies and for graduate school in ecology or natural resource management. Students who graduate with this major may qualify for the following federal civil service jobs:

- biological technician (Series 0404),
- ecologist (Series GS-408),
- forester (Series G-460),
- hydrologist (Series GS-1315) and
- soil conservationist (Series GS-457).


Bachelor of Science - Ecosystem Science & Restoration; Terrestrial Concentration

W.A Franke College of Forestry & Conservation

Degree Specific Credits: 88

Required Cumulative GPA: 2.0

Catalog Year: 2017-2018

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.

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Major Required Courses

Must take all courses

- NRSM 121S Nature of Montana 3
- NRSM 210N Soils, Water and Climate 3
- NRSM 265 Elements of Ecological Restora 3

Total Hours 12

Minimum Required Grade: C-

Outside Major Required Courses

Must take all courses

- BIOB 160N Principles of Living Systems 3
- BIOB 161N Prncpls of Living Systems Lab 1
- BIOB 260 Cellular and Molecular Biology 4
- BIOB 272 Genetics and Evolution 4
- BIOO 105N Introduction to Botany 3
- CHMY 121N Introduction to General Chemistry 3
- CHMY 123 Introduction to Organic and Biochemistry 3
- COMX 111A Intro to Public Speaking or THTR 120A Introduction to Acting I 3
- M 162 Applied Calculus 4
- WRIT 101 College Writing I 3
- Select one of the following: 3-4
  - STAT 216 Introduction to Statistics
  - FORS 201 Forest Biometrics
  - WILD 240 Intro to Biostatistics

Total Hours 34-35

Minimum Required Grade: C-

Major Required Courses

Must take all courses

- NRSM 344 Ecosystem Science and Restoration Capstone 5
NRSM 385  Watershed Hydrology  3
NRSM 389E  Ethics Forestry & Conservation  3
or NRSM 449E  Climate Change Ethics/Policy  
NRSM 422  Nat Res Policy/Administration  3
NRSM 465  Foundations of Restoration Ecology  3
or BIOE 447  Terrestrial Ecosystem Ecology  
NRSM 494  Ecosystem Science and Restoration Seminar  1
NRSM 495  Ecosystem Science and Restoration Practicum  1-6

Total Hours  19-24

Minimum Required Grade: C-

Outside Major Required Courses
Note: Can take BIOE 448 OR FORS 330 OR NRSM 462

Must take all courses
BIOE 370  General Ecology  3
BIOO 335  Rocky Mountain Flora  3

Total Hours  6

Minimum Required Grade: C-

Restoration Terrestrial Electives
Note: No Double Dipping with CORE courses

Select at least 9 credits from the following:  9
BIOE 342  Field Ecology
BIOE 416  Alpine Ecology
BIOE 447  Terrestrial Ecosystem Ecology
BIOE 448  Terrestrial Plant Ecology
BIOE 451  Landscape Ecology
BIOE 458  Forest and Grassland Ecol
BIOO 320  General Botany
BIOO 433  Plant Physiology
FORS 202  Forest Mensuration
FORS 250  Intro to GIS for Forest Mgt
FORS 330  Forest Ecology
FORS 331  Wildland Fuel Management
FORS 333  Fire Ecology
FORS 347  Multiple Resource Silviculture
GEO 318  Climate System Dynamics
NRSM 360  Rangeland Mgt (equiv 260)
NRSM 408  Global Cycles and Climate
NRSM 415  Environmental Soil Science
NRSM 418  Ecosystem Climatology
NRSM 465  Foundations of Restoration Ecology
NRSM 462  Rangeland Ecology
WILD 470  Conserv of Wildlife Populatns

Total Hours  9

Minimum Required Grade: C-

Restoration Social Science Elective Courses

Select at least one of the following:  3
ECNS 433  Economics of the Environment
FORS 320  Forest Environmental Economics
NRSM 379  Collab in Nat Res Decisions
NRSM 426  Climate and Society
NRSM 475  Environment & Development

Total Hours  3

Minimum Required Grade: C-

Writing Required for the Major
Rule: Must complete the following subcategories

Lower Division Writing
NRSM 200  Nat.Resource Professional Wrtg  3
Total Hours  3

Minimum Required Grade: C-

Upper Division Writing
Select at least three of the following:  9
BIOE 428  Freshwater Ecology
FORS 330  Forest Ecology
NRSM 344  Ecosystem Science and Restoration Capstone
NRSM 379  Collab in Nat Res Decisions
NRSM 495  Ecosystem Science and Restoration Practicum
NRSM 499  Senior Thesis

Total Hours  9

Minimum Required Grade: C-

Math Requirement for Major
Rule: Must take all courses
M 162  Applied Calculus  4
Total Hours  4

Minimum Required Grade: C-

Exception to the Modern/Classical Languages Requirement
Rule: The Ecosystem Science and Restoration major has been granted an exception to the Modern/Classical Language Requirement. Must take one of the following courses to will satisfy this requirement.

Select one of the following:  3-4
FORS 201  Forest Biometrics
STAT 216  Introduction to Statistics
<table>
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<th>WILD 240</th>
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<td>Minimum Required Grade: C-</td>
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**Expressive Arts Requirement for Major**

**Rule:** must take one of the following courses

| COMX 111A | Intro to Public Speaking | 3 |
| or THTR 120A | Introduction to Acting I |  |
| Total Hours | 3 |
| Minimum Required Grade: C- |

**Social Sciences**

**Rule:** May take the below course

| NRSM 121S | Nature of Montana | 3 |
| Total Hours | 3 |
| Minimum Required Grade: C- |

**Ethical & Human Values Elective within Major**

**Rule:** must take one of the following courses

| NRSM 449E | Climate Change Ethics/Policy | 3 |
| or NRSM 389E | Ethics Forestry & Conservation |  |
| Total Hours | 3 |
| Minimum Required Grade: C- |

**Natural Sciences within Major**

**Rule:** Must take all courses

| BIOB 160N | Principles of Living Systems | 3 |
| BIOB 161N | Principles of Living Systems Lab | 1 |
| CHMY 121N | Introduction to General Chemistry | 3 |
| Total Hours | 7 |
| Minimum Required Grade: C- |