ENVIRONMENTAL SCIENCE AND SUSTAINABILITY B.S. - WATER RESOURCES

The Water Resources concentration prepares students for careers and/or graduate study related to watershed hydrology, water policy, and other aspects of water resources governance and management. Coursework focuses on technical training in fundamental sciences such as physics, chemistry, and biology; more specialized training in hydrology, hydrogeology, geomorphology, and soil science; and the social and political context of water use, allocation, conservation, and management, both with regard to water quality and water quantity issues. Students who complete this concentration will satisfy the education requirements for the Hydrology Series (1315) and Hydrologic Technician Series (1316) civil service qualifications.

Bachelor of Science - Environmental Science and Sustainability; Water Resources Concentration

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

Code	Title	Hours
Lower-Division Required Courses		17-18
Water Resources Concentration Requirements		
Required Courses		14
Lower-Division Biology		3-4
Upper-Division Biological Science		3-5
Ecology		3
Ethics		3
Geology		4
Mathematics		8
Physical Science		3-4
Social Science		3
Experiential Learning Requirement		
Advanced Writing Requirement		
Total Hours		**61-66**

Degree Specific Credits: 61-66

Required Cumulative GPA: 2.0

Lower-Division Required Courses

Note: NRSM 110 will not be required if students declare the major with 60+ credits.

Code	Title	Hours
Complete the following courses:		
NRSM 110	First Year Seminar in Environmental Science and Sustainability	1
NRSM 121S	Environmental Science and Sustainability	3
NRSM 211N & NRSM 212N	Soils and Water and Ecology, Physics and Taxonomy of Soils	3
Oral Communication - Complete one of the following courses:		
COMX 111A	Introduction to Public Speaking	3
or THTR 120A	Introduction to Acting I	
Statistics Requirement - Complete one of the following courses:		**3-4**
FORS 201	Forest Biometrics	
STAT 216	Introduction to Statistics	
WILD 240	Intro to Biostatistics	
Chemistry - Complete the following course:		
CHMY 121N	Introduction to General Chemistry	4
Total Hours		**17-18**

Minimum Required Grade: C-

Water Resources Concentration Requirements

Rule: Complete all of the following subcategories.

Required Courses

Code	Title	Hours
Complete all of the following courses:		
GPHY 335	Water and Sustainability	3
NRSM 385	Watershed Hydrology	3
NRSM 427	Water Policy	3
PHSX 205N	College Physics I	4
PHSX 206N	College Physics I Laboratory	1
Total Hours		**14**

Minimum Required Grade: C-

Lower-Division Biology

Code	Title	Hours
Complete one of the following courses:		**3-4**
BIOB 160N	Principles of Living Systems	
BIOB 170N	Principles of Biological Diversity	
BIOE 172N	Introductory Ecology	
BIOO 105N	Introduction to Botany	
Total Hours		**3-4**

Minimum Required Grade: C-

Upper-Division Biological Science

Code	Title	Hours
Complete one of the following courses:		**3-5**
BIOE 447	Ecosystem Ecology	
BIOE 400	Aquatic Microbial Ecology	

BIOE 428	Freshwater Ecology	
BIOE 439	Stream Ecology	
BIOE 453	Lake Ecology	
GPHY 474	UAV Remote Sensing for Field Ecology	
WILD 485	Aquatic Invertebrate Ecology	
Total Hours		**3-5**

Minimum Required Grade: C-

Ecology

Code	Title	Hours
Complete one of the following courses:		**3**
BIOE 447	Ecosystem Ecology	
FORS 330	Forest Ecology	
FORS 333	Fire Ecology	
Total Hours		**3**

Minimum Required Grade: C-

Ethics

Code	Title	Hours
Complete one of the following:		**3**
NRSM 349E	Climate Change Ethics and Policy	
NRSM 389E	Ethics and Sustainability	
Total Hours		**3**

Minimum Required Grade: C-

Geology

Code	Title	Hours
Complete one of the following sequences:		**4**
GEO 101N & GEO 102N	Introduction to Physical Geology and Introduction to Physical Geology Lab	
GEO 103N & GEO 104N	Introduction to Environmental Geology and Introduction to Environmental Geology Laboratory	
Total Hours		**4**

Minimum Required Grade: C-

Mathematics

Code	Title	Hours
Complete both of the following courses:		
M 171	Calculus I	4
M 172	Calculus II	4
Total Hours		**8**

Minimum Required Grade: C-

Physical Science

Code	Title	Hours
Complete one of the following courses:		**3-4**
GEO 320	Global Water	
GEO 420	Hydrogeology	
GEO 421	Hydrology	
GEO 460	Process Geomorphology	
Total Hours		**3-4**

Minimum Required Grade: C-

Social Science

Code	Title	Hours
Complete one of the following courses:		**3**
NRSM 326	Climate and Society	
NRSM 379	Collaborations in Natural Resource Decisions	
NRSM 424	Community Forestry & Conservation	
NRSM 475	Environment & Development	
PTRM 300	Recreation Behavior	
Total Hours		**3**

Minimum Required Grade: C-

Experiential Learning Requirement

Code	Title	Hours
Complete one of the following courses:		**3**
BIOE 342	Field Ecology	
BIOE 400	Aquatic Microbial Ecology	
BIOE 416	Alpine Ecology	
BIOE 439	Stream Ecology	
BIOE 440	Conservation Ecology	
BIOE 451	Landscape Ecology	
BIOE 453	Lake Ecology	
BIOE 458	Forest and Fire Ecology	
ENST 427	Social Issues: The Mekong Delta	
ENST 437	Climate Change: Mekong Delta	
FORS 130	Introduction to Forestry Field Skills	
FORS 440	Forest Stand Management	
GPHY 385	Field Techniques	
NRSM 115	First Year Seminar in Field Studies in Conservation	
NRSM 273	Wilderness and Civilization Field Studies	
NRSM 298	Internship	
NRSM 345	Watershed Dynamics	
NRSM 398	Internship	
NRSM 495	Ecosystem Science and Restoration Practicum	
NRSM 498	Internship	
NRSM 499	Senior Thesis	
PTRM 150	First Year Seminar in Parks, Tourism, and Recreation Management	
PTRM 345X	Sustaining Human Society & Natural Environment	
PTRM 418	Winter Wilderness Field Studies	
PTRM 484	Capstone in Parks, Tourism, and Recreation Management	

WILD 374	Hunter Check Station	
Total Hours		**3**

Minimum Required Grade: C-

Advanced Writing Requirement

Code	Title	Hours
Complete three of the following courses:		**9**
BIOE 428	Freshwater Ecology	
BIOE 447	Ecosystem Ecology	
FORS 330	Forest Ecology	
FORS 341	Timber Harvesting & Roads	
FORS 347	Multiple Resource Silviculture	
FORS 349	Practice of Silviculture	
FORS 440	Forest Stand Management	
FORS 499	Senior Thesis	
NASX 403	Contemporary Tribal Resource Issues	
NRSM 326	Climate and Society	
NRSM 349E	Climate Change Ethics and Policy	
NRSM 379	Collaborations in Natural Resource Decisions	
NRSM 389E	Ethics and Sustainability	
NRSM 462	Rangeland Ecology	
NRSM 465	Foundations of Restoration Ecology	
NRSM 475	Environment & Development	
NRSM 495	Ecosystem Science and Restoration Practicum	
NRSM 499	Senior Thesis	
PTRM 300	Recreation Behavior	
WILD 410	Wildlife Policy & Biopolitics	
Total Hours		**9**

Minimum Required Grade: C-