

MONTANA STATE UNIVERSITY - DEPARTMENT OF LAND RESOURCES & ENVIRONMENTAL SCIENCES
Requirements for a Minor in Water Resources
2014 - 2015 Catalog

Name: _____ **GID#** _____ **Date:** _____ **Graduating Semester:** _____

ALL DEPARTMENTAL REQUIREMENTS & THEIR PREREQUISITES MUST BE A GRADE OF C- OR BETTER
GRADUATION WORKSHEETS ARE DUE ONE YEAR BEFORE GRADUATION

DEPARTMENTAL REQUIREMENTS FOR MINOR: 21 credits

Subject/#	Course Title	Credits	Semester	Year	EXCEPTIONS
ENSC 272CS	Water Resources	3	F S		

Choose one of the following:

ENSC 498	Internship	3	F S Su		
GPHY 498	Internship (on demand)	3	F S Su		
ECIV 498	Internship (on demand)	3	F S Su		
PSCI 498	Internship	3	F S Su		

Restricted Electives (take 15 credits, at least one from each subject area)

Basic Science Courses

BIOE 428	Freshwater Ecology	3	F		
BIOM 360	General Microbiology	5	F S		
BIOM 415	Microbial Diversity, Ecology, and Evolution	3	S'ev		
BIOM 452	Soil & Environmental Microbiology	3	S'od		
CHMY 311	Fundamental Analytical Chemistry	4	S		
EENV 434	Groundwater Supply/Remediation	3	S		
ENSC 444	Watershed Hydrology	3	F		
ENSC 445	Watershed Analysis	3	S		
ENSC 454	Landscape Pedology	3	F		
ENSC 465	Environmental Biophysics	3	S		
ENSC 468	Ecosystem Biogeochemistry	3	S		
ERTH 303	Weather and Climate	3	F		
ERTH 307	Principles of Geomorphology	4	F		
ERTH 450R	Snow Dynamics and Accumulation	4	S		

Applied Science Courses

ECIV 331	Engineering Hydrology	2	F		
EENV 340	Principles of Environmental Engineering	3	F S		
EENV 441	Natural Treatment Systems	3	F		
ENSC 353	Environmental Biogeochemistry	3	F		
ENSC 407	Environmental Risk Assessment	3	F'od		
ENSC 448	Stream Restoration Ecology	3	F		
ENSC 461	Restoration Ecology	3	F		
GPHY 384	Advanced GIS and Spatial Analysis	3	F S		
GPHY 426	Remote Sensing	3	F		
GPHY 429R	Applied Remote Sensing	3	S		
GPHY 457	Advanced GPS Mapping for GIS	3	F		
GPHY 484R	Applied GIS & Spatial Analysis	3	S		
NRSM 455	Riparian Ecology & Management	3	S		
WILD 301	Principles of Fish & Wildlife Management	3	S		

(over)

Social Science Courses					
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ECNS 332	Economics of Natural Resources	3	F		
ECNS 432R	Benefit-Cost Analysis	3	S		
HSTA 470	American Environmental History (on demand)	3			
NRSM 421	Holistic Thought/Management	4	S		
NRSM 430	Natural Resource Law	3	S		
PSCI 362	Natural Resource Policy	3	S		
SOCI 470	Environmental Sociology (on demand)	3			

Student:	Date:
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Advisor:	Date:
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Certifying Officer:	Date:
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The Water Resources Minor is designed to encourage a student from any discipline to explore water resources beyond course work in their major. As a result, the minor includes courses from the College of Agriculture, the College of Engineering, and the College of Letters and Science. The minor is administered by the Water Resources Committee (WRM) under the guidance of the Montana Institute on Ecosystems. Any committee member may serve as an advisor for the minor (see list of Faculty Advisors below). The chair of the committee, IoE Director, serves as the curriculum review officer and signs the application for a Non-Teaching Minor after approved and forwarded by departmental advisors.

This minor requires a minimum of 21 credits. The courses are grouped into basic and applied research and social sciences courses. Students are expected to create a diverse program, with course selections from both science and social science areas. No more than 12 credits may be used to simultaneously fulfill Water Resources Minor requirements, University Core and the student's major (at least 9 credits must be unique to the minor). The student's major advisor must certify that the 12-credit restriction is not exceeded. Course substitutions are allowed only by appeal to and approval by the WRM advisor and should be sent to the committee chair. The written appeal should identify the substitution and present a brief rationale.

Any 290, 490, 291, 491, 292, or 492 course(s) related to water may be used in the minor.