

FRESHWATER SCIENCES, BS: WATER POLICY

Freshwater scientists provide scientifically sound management of natural and constructed water systems for productive and equitable use while sustaining natural biota, diversity and freshwater availability. They also generate solutions to the problems facing freshwater through a complete understanding of water resources, the social systems in which they operate, and the application of technology, conservation, and sustainable management practices. Students take a broad curriculum within Freshwater Sciences and choose from the Water Policy or Aquatic Sciences track. Both tracks combine core classes in natural sciences, mathematics, economics and computer science with additional coursework in areas such as sustainability and environmental law.

Studies in Freshwater Sciences will help students prepare for careers in ecological and environmental sciences, natural resources, technology, and policy relevant to freshwater systems and resources. A degree in Freshwater Sciences also prepares students for professional careers in business and industry, government, non-profit organizations, as well as graduate studies in freshwater and environmental sciences.

Requirements

Students must earn a minimum of 120 credits to complete the BS in Freshwater Sciences degree. Students in this program must complete at least 30 credits in residence at UWM and must maintain an average of at least 2.00 in all 300-level and above courses in the freshwater sciences major.

General Education Requirements (GERs)

UW-Milwaukee has General Education Requirements (<https://catalog.uwm.edu/policies/undergraduate-policies/#bachelorsdegreegeneraleducation>) that must be met in order to earn a bachelor's degree. Some of the requirements of your program, including Foundation Courses, fulfill the campus GERs. Please review the requirements and consult with your academic advisor.

Foundation Courses

Code	Title	Credits
BIO SCI 150	Foundations of Biological Sciences I (satisfies GER-NS+)	4
BIO SCI 152	Foundations of Biological Sciences II (satisfies GER-NS+)	4
CHEM 102	General Chemistry	5
CHEM 104	General Chemistry and Qualitative Analysis	5
COMPSCI 202	Introductory Programming Using Python	3
ECON 103	Principles of Microeconomics (satisfies GER-SS)	3
MTHSTAT 215	Elementary Statistical Analysis (satisfies QL-B)	3
MATH 213 or MATH 231	Calculus with Life Sciences Applications Calculus and Analytic Geometry I	4
Total Credits		31

Core Courses

Code	Title	Credits
FRSHWTR 101	Elements of Water	3
FRSHWTR 120	Preparing for a Career in Freshwater Sciences	1
FRSHWTR 201	The Water Environment	3
FRSHWTR 202	Life in Water	4
FRSHWTR 391	Water and Natural Resource Economics	3
FRSHWTR 392	Water, Energy, Food, and Climate	3
FRSHWTR 361	Introduction to Environmental Data Systems	3
Select one of the following:		3-4
FRSHWTR 464	Chemical Hydrogeology	
GEO SCI 400	Water Quality	
GEO SCI 562	Environmental Surface Hydrology	
FRSHWTR 660 or FRSHWTR 662	Professional and Capstone Planning Thesis Research Planning and Proposal Development	1
FRSHWTR 661 or FRSHWTR 663	Undergraduate Capstone Undergraduate Research and Thesis	3
GEOG 215	Introduction to Geographic Information Science	3
Total Credits		30-31

Water Policy Track Requirements

Code	Title	Credits
Required Courses		
FRSHWTR 393	Water Law, Policy, and the Environment	3
Electives		
Choose at least 9 credits from the following list, including at least 3 FRSHWTR credits:		9
FRSHWTR 300	Topics in Freshwater Sciences:	
FRSHWTR 461	Politics and Policy of Sustainability	
FRSHWTR 510	Economics, Policy and Management of Water	
FRSHWTR 583	Cost-Benefit Analysis for Environmental Resource Decisions	
FRSHWTR 584	Aquatic Ecosystem Services Valuation	
FRSHWTR 585	Applied Water Statistics and Data Manipulation	
POL SCI 216	Environmental Politics	
ATM SCI 600	Data Analytics	
GEOG 525	Geographic Information Science	
GEOG 625	Intermediate Geographic Information Science	
ECON 210	Economic Statistics	
ECON 301	Intermediate Microeconomics	
ECON 310	Research Methods for Economics	
HIST 432	North American Environmental History	
Total Credits		12

Electives

With the help of their academic advisor, students will select electives to complete the 120 total credits required for the degree. Electives

are tailored to each student's interests and career goals. Students may choose a related area of specialization outside of the Freshwater Sciences by completing any minor or interdisciplinary certificate offered by UWM, typically comprised of 18-22 credits. In some cases, students may choose to study two related areas, or they may complement a certificate or minor with other courses of interest.

Water Policy Example Pathway

Year 1		Credits
Semester 1		
FRSHWTR 120	Preparing for a Career in Freshwater Sciences	1
CHEM 100	Chemical Science	4
MATH 105	Introduction to College Algebra (QLA)	3
ENGLISH 101	Introduction to College Writing	3
Humanities GER		3
Credits		14
Semester 2		
FRSHWTR 101	Elements of Water	3
CHEM 102	General Chemistry	5
MATH 115	Precalculus	4
BIO SCI 150	Foundations of Biological Sciences I	4
Credits		16
Year 2		
Semester 3		
FRSHWTR 202	Life in Water	4
CHEM 104	General Chemistry and Qualitative Analysis	5
MATH 213	Calculus with Life Sciences Applications	4
BIO SCI 152	Foundations of Biological Sciences II	4
Credits		17
Semester 4		
FRSHWTR 201	The Water Environment	3
ENGLISH 102	College Writing and Research	3
1st semester World Language		4
MTHSTAT 215	Elementary Statistical Analysis (QLB)	3
Arts GER		3
Credits		16
Year 3		
Semester 5		
ECON 103	Principles of Microeconomics (SS)	3
COMPSCI 202	Introductory Programming Using Python	3
FRSHWTR 361	Introduction to Environmental Data Systems	3
FRSHWTR 393	Water Law, Policy, and the Environment	3
2nd semester World Language		4
Credits		16
Semester 6		
FRSHWTR 392	Water, Energy, Food, and Climate	3
FRSHWTR 391	Water and Natural Resource Economics	3
FRSHWTR 464	Chemical Hydrogeology	4
GER OWC-B		3
Social Science GER		3
Credits		16
Year 4		
Semester 7		
FRSHWTR 660	Professional and Capstone Planning	1
GEOG 215	Introduction to Geographic Information Science	3
WP Elective		3
WP Elective		3
Humanities GER		3
Credits		13
Semester 8		
FRSHWTR 661	Undergraduate Capstone	3

WP Elective	3
Additional Elective	3
Cultural Diversity GER	3
Credits	12
Total Credits	120

Freshwater Sciences BS Learning Outcomes

Students graduating from the Freshwater Sciences BS program will be able to:

- **Describe** the intricacies of aquatic life and ecological interactions within the physical environment.
- **Examine** and **analyze** the interconnectedness of biological, ecological, physical, climate, and economic systems related to water.
- **Analyze** the hydrologic cycle, including atmospheric, surface, and groundwater dynamics, and address water quality concerns.
- **Examine** chemical and biogeochemical interactions within global earth systems and water management.
- **Engage** in multidisciplinary data collection, analysis, and communication, utilizing various methodologies including geographic systems, modeling, sampling, and genomics.

Accelerated Program Option

This program is offered as part of an accelerated graduate program. For more information, see Accelerated Graduate Degrees (<https://catalog.uwm.edu/opportunities-resources/accelerated-graduate-degrees/>).

School of Freshwater Sciences Dean's Honor List

GPA of 3.500 or above, earned on a full-time student's GPA on 12 or more graded credits in a given semester.

Honors College Degree and Honors College Degree with Distinction

Granted to graduating seniors who complete Honors College requirements, as listed in the Honors College (<https://catalog.uwm.edu/honors-college/>) section of this site.

Commencement Honors

Students with a cumulative GPA of 3.500 or above, based on a minimum of 40 graded UWM credits earned prior to the final semester, will receive all-university commencement honors and be awarded the traditional gold cord at the December or May Honors Convocation. Please note that for honors calculation, the GPA is **not** rounded and is truncated at the third decimal (e.g., 3.499).

Final Honors

Earned on a minimum of 60 graded UWM credits: Cum Laude - 3.500 or above; Magna Cum Laude - 3.650 or above; Summa Cum Laude - 3.800 or above.

Contact Information

Freshwater Sciences
School of Freshwater Sciences
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<https://uwm.edu/freshwater/academics/freshwater-sciences/>