FRESHWATER SCIENCES (FRSHWTR)

Freshwater Sciences Courses

FRSHWTR 101 Elements of Water
3 cr. Undergraduate.
The most important natural resource on Earth is freshwater. This course will address the importance of water in biological, ecological, physical, climate and economic systems, and the consequences of disrupting the natural water cycle.
Prerequisites: none.
General Education Requirements: Natural Science and Wellness
Last Taught: Fall 2025, Summer 2025, Spring 2025, Fall 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 105 Our Blue Planet and Us: Societal Impacts on Global Freshwater Systems
3 cr. Undergraduate.
Explore the global connections between human society and freshwater ecosystems, focusing on invasive species, contaminants, and climate change, drawing on the research of multiple scientists.
Prerequisites: none.
General Education Requirements: Civics and Perspectives
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 120 Preparing for a Career in Freshwater Sciences
1 cr. Undergraduate.
Provides students with an introduction to student success strategies and campus support services, an understanding of the freshwater sciences major's academic requirements, and an opportunity to explore careers, internships, and scholarships in the freshwater sciences.
Prerequisites: none.
Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 190 Topics in Freshwater Sciences:
1-3 cr. Undergraduate.
Current issues in freshwater sciences for undergraduates.
Prerequisites: none, except as may be required for specific topics.
Course Rules: May be retaken with change in topic to 9 cr max.
Last Taught: Summer 2024, Summer 2023, Spring 2023, Spring 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 191 Great Lakes Ecology
3 cr. Undergraduate.
A select history of Great Lakes ecosystem change.
Prerequisites: none.
Course Rules: Counts as repeat of Frshwtr 190 with similar topic.
Last Taught: Spring 2021, Spring 2020, Spring 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 201 The Water Environment
3 cr. Undergraduate.
The water environment is the complex of physical, chemical, and biotic factors that act upon an organism and ultimately determine its form and survival.
Prerequisites: a grade of C or better in BIO SCI 150(P) and CHEM 102(P); and MATH 105(P); or consent of instructor.
Last Taught: Spring 2025, Spring 2024, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 202 Life in Water
4 cr. Undergraduate.
How organisms interact with each other and their environment. An interdisciplinary approach will expose students to the vast diversity of life forms inhabiting different aquatic environments.
Prerequisites: a grade of C or better in BIO SCI 150(P) and CHEM 102(P); and MATH 105(P); or consent of instructor.
Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 208 Freshwater Sciences Internship
0-3 cr. Undergraduate.
Students conceptualize, reflect upon, and apply the experiences of their public health internship. They will consider questions such as: 'How does my internship connect to my future career and community?'
Prerequisites: consent of instructor.
Course Rules: May be taken with change in internship to max of 6 cr.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 296 UROP Apprenticeship, Lower-Level
1-3 cr. Undergraduate.
Undergraduate research participation in a project developed with a supervising member of the faculty or staff. One credit for 45 hours of research.
Prerequisites: freshman or sophomore standing and acceptance to UROP.
Course Rules: May be retaken up to 9 cr max in any combination of UROP Apprenticeship courses. Not open to juniors and seniors.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 300 Topics in Freshwater Sciences:
1-3 cr. Undergraduate.
Current issues in freshwater sciences for upper-level undergraduates.
Prerequisites: junior standing or greater, BIO SCI 150(P), and CHEM 100(P).
Course Rules: May be taken with change in topic to 9 cr max.
Last Taught: Fall 2025, Summer 2025, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 321 Exploration of Inland Seas
3 cr. Undergraduate.
An introduction to the unique physical, chemical and biological properties of Earth's largest lakes and their history of research and management.
Prerequisites: sophomore standing or above, or consent of instructor.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 322 Ecology and Evolution of Freshwater Organisms
3 cr. Undergraduate/Graduate.
Explores the fundamental concepts of population, community, and ecosystem ecology and evolution applied to aquatic ecosystems.
Prerequisites: BIO SCI 150(P) or graduate standing or consent of instructor.
Last Taught: Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 322G Ecology and Evolution of Freshwater Organisms
3 cr. Undergraduate/Graduate.
Explores the fundamental concepts of population, community, and ecosystem ecology and evolution applied to aquatic ecosystems.
Prerequisites: BIO SCI 150(P) or graduate standing or consent of instructor.
Last Taught: Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 341 Sanitation and Sustainability
3 cr. Undergraduate.
Examines the impacts of human populations on the natural environment and highlight the engineered systems and infrastructure that minimize these impacts.
Prerequisites: BIO SCI 150(P) and CHEM 102(P); or consent of instructor.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 342 Water Pollution, Technology and Management
3 cr. Undergraduate/Graduate.
Overview of the types of pollutants found in freshwater systems, their origin and movement. Various approaches to cleanup, water and wastewater treatment will also be discussed.
Prerequisites: CHEM 102(P), or consent of instructor, or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 342G Water Pollution, Technology and Management
3 cr. Undergraduate/Graduate.
Overview of the types of pollutants found in freshwater systems, their origin and movement. Various approaches to cleanup, water and wastewater treatment will also be discussed.
Prerequisites: CHEM 102(P), or consent of instructor, or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 361 Introduction to Environmental Data Systems
3 cr. Undergraduate.
Introduction to approaches to acquire, manage, and process data and use the analysis outcomes to solve social-environmental and ecological problems.
Prerequisites: COMPSCI 202(P) and completion of one of the following: MTHSTAT 215, MATH 213, MATH 221, or MATH 231; or consent of instructor.
Last Taught: Fall 2025, Fall 2024, Fall 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 362 Calculating Nature
3 cr. Undergraduate.
Provides students with a fundamental set of mathematical tools and techniques for characterizing environmental systems.
Prerequisites: a grade of C or better in MATH 115(P) or consent of instructor.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 381 Honors Seminar:
3 cr. Undergraduate.
Selected topics in freshwater sciences.
Prerequisites: 200-level HONORS course and consent of Honors College Director.
Course Rules: May be retaken with change in topic to 9 cr max.
General Education Requirements: Natural Science and Wellness
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 391 Water and Natural Resource Economics
3 cr. Undergraduate.
Economic theory and tools for analyzing environmental management decisions are developed and applied to water and other natural resources.
Prerequisites: ECON 103(P) or consent of instructor.
Last Taught: Spring 2025, Spring 2024, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 392 Water, Energy, Food, and Climate
3 cr. Undergraduate.
Identify social and environmental dimensions of environmental systems at their interlinkages. Analyze policy and economic aspects of sustainability as it relates to water and related environmental issues such as climate, energy, and food.
Prerequisites: sophomore standing or higher.
Last Taught: Fall 2025, Fall 2024, Spring 2024, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 393 Water Law, Policy, and the Environment
3 cr. Undergraduate.
Processes and complexities of environmental policy, legal-political responsiveness, and social-ecological resilience.
Prerequisites: sophomore standing or greater.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 421 Molecular Level Tools to Understand Larger Scale Change
3 cr. Undergraduate.
An exploration of the tools and methods used to obtain and then scale-up molecular level data to understand freshwater ecosystems.
Prerequisites: junior standing or greater, CHEM 104(P), BIO SCI 152(P), FRSHWTR 201(P), and FRSHWTR 202(P); or consent of instructor.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 461 The Politics and Policy of Sustainability
3 cr. Undergraduate/Graduate.
Principles of environmental policy, governance, and management for global sustainability.
Prerequisites: junior standing; CES 210(P) or consent of instructor.
Course Rules: CES 461, FRSHWTR 461, & GLOBAL 461 are jointly offered; they count as repeats of one another.
Last Taught: Fall 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 461G The Politics and Policy of Sustainability
3 cr. Undergraduate/Graduate.
Principles of environmental policy, governance, and management for global sustainability.
Prerequisites: junior standing; CES 210(P) or consent of instructor.
Course Rules: CES 461, FRSHWTR 461, & GLOBAL 461 are jointly offered; they count as repeats of one another.
Last Taught: Fall 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 464 Chemical Hydrogeology
4 cr. Undergraduate/Graduate.
Natural chemical processes that occur in groundwater systems, how they are modified by human activity and contamination, and attempts to regulate them.
Prerequisites: junior standing and CHEM 102(P).
Course Rules: FRSHWTR 464 & GEO SCI 464 are jointly-offered and count as repeats of one another. 3 hrs lec, 3 hrs lab.
Last Taught: Spring 2025, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 464G Chemical Hydrogeology
4 cr. Undergraduate/Graduate.
Natural chemical processes that occur in groundwater systems, how they are modified by human activity and contamination, and attempts to regulate them.
Prerequisites: junior standing and CHEM 102(P).
Course Rules: FRSHWTR 464 & GEO SCI 464 are jointly-offered and count as repeats of one another. 3 hrs lec, 3 hrs lab.
Last Taught: Spring 2025, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 471 Introduction to Sensing Networks
3 cr. Undergraduate/Graduate.
A combination of satellite and underwater sensors are analyzed for surface water quantity observation. Students will learn modelling techniques for multiple sources of data.
Prerequisites: MTHSTAT 215(P) or FRSHWTR 585(P) and MATH 213(P) or MATH 231(P); or graduate standing; or consent of instructor.
Course Rules: Counts as a repeat of FRSHWTR 650 with similar topic.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 471G Introduction to Sensing Networks
3 cr. Undergraduate/Graduate.
A combination of satellite and underwater sensors are analyzed for surface water quantity observation. Students will learn modelling techniques for multiple sources of data.
Prerequisites: MTHSTAT 215(P) or FRSHWTR 585(P) and MATH 213(P) or MATH 231(P); or graduate standing; or consent of instructor.
Course Rules: Counts as a repeat of FRSHWTR 650 with similar topic.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 490 Sustainable Design for Community Development
3 cr. Undergraduate/Graduate.
Transdisciplinary students will work on sustainable projects and designs to address complex societal problems that require consideration of economy, environment, politics, and technology that leverage community-based knowledge.
Prerequisites: junior standing or consent of instructor; MECHENG 320(R).
Course Rules: EAS 490, FRSHWTR 490, and PEACEST 490 are jointly offered and count as repeats of one another.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 490G Sustainable Design for Community Development
3 cr. Undergraduate/Graduate.
Transdisciplinary students will work on sustainable projects and designs to address complex societal problems that require consideration of economy, environment, politics, and technology that leverage community-based knowledge.
Prerequisites: junior standing or consent of instructor; MECHENG 320(R).
Course Rules: EAS 490, FRSHWTR 490, and PEACEST 490 are jointly offered and count as repeats of one another.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 496 UROP Apprenticeship, Upper-Level
1-3 cr. Undergraduate.
Undergraduate research participation in a project developed with a supervising member of the faculty or staff. One credit for 45 hrs of research.
Prerequisites: junior standing, acceptance to UROP, and prior or concurrent registration in UROP seminar.
Course Rules: May be retaken to 9 cr max in any combination of UROP apprenticeship courses.
Last Taught: Spring 2017, Fall 2013.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 497 Study Abroad:
1-12 cr. Undergraduate/Graduate.
Designed to enroll students in UWM sponsored program before course work level, content and credits are determined and/or in specially prepared program course work.
Prerequisites: jr st; acceptance for Study Abroad Prog.
Course Rules: May be retaken w/chg in topic.
Last Taught: UWinteriM 2012.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 497G Study Abroad:
1-12 cr. Undergraduate/Graduate.
Designed to enroll students in UWM sponsored program before course work level, content and credits are determined and/or in specially prepared program course work.
Prerequisites: jr st; acceptance for Study Abroad Prog.
Course Rules: May be retaken w/chg in topic.
Last Taught: UWinteriM 2012.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 498 Undergraduate Research
1-3 cr. Undergraduate.
Undergraduate research on faculty-supervised research projects.
Prerequisites: jr st; cons instr.
Course Rules: May be retaken to 6 cr max.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 502 Aquatic Ecosystem Dynamics
3 cr. Undergraduate/Graduate.
Interdisciplinary, quantitative approach to understanding large lake dynamic processes, including geological formation, hydrology, hydrodynamics, chemistry and the dynamics of plankton and fish communities.
Prerequisites: junior standing, BIO SCI 150(P), and CHEM 102(P); and MATH 115(P), MATH 116(P), or MATH 211(P); or consent of instructor; or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 502G Aquatic Ecosystem Dynamics
3 cr. Undergraduate/Graduate.
Interdisciplinary, quantitative approach to understanding large lake dynamic processes, including geological formation, hydrology, hydrodynamics, chemistry and the dynamics of plankton and fish communities.
Prerequisites: junior standing, BIO SCI 150(P), and CHEM 102(P); and MATH 115(P), MATH 116(P), or MATH 211(P); or consent of instructor; or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 504 Quantitative Freshwater Analysis
3 cr. Undergraduate/Graduate.
A fundamental set of tools for the quantitative analysis of environmental data sets, with an emphasis on the calculation of reservoirs, residence times and rates in aquatic systems.
Prerequisites: junior standing, BIO SCI 150(P), and CHEM 102(P); and MATH 115(P), MATH 116(P), or MATH 211(P); or consent of instructor; or graduate standing.
Last Taught: Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 504G Quantitative Freshwater Analysis
3 cr. Undergraduate/Graduate.
A fundamental set of tools for the quantitative analysis of environmental data sets, with an emphasis on the calculation of reservoirs, residence times and rates in aquatic systems.
Prerequisites: junior standing, BIO SCI 150(P), and CHEM 102(P); and MATH 115(P), MATH 116(P), or MATH 211(P); or consent of instructor; or graduate standing.
Last Taught: Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 506 Environmental Health of Freshwater Ecosystems
3 cr. Undergraduate/Graduate.
The influences of human-induced environmental change on the health of freshwater ecosystems and humans who interact with these systems.
Prerequisites: junior standing, BIO SCI 150(P), and CHEM 102(P); or consent of instructor; or graduate standing.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 506G Environmental Health of Freshwater Ecosystems
3 cr. Undergraduate/Graduate.
The influences of human-induced environmental change on the health of freshwater ecosystems and humans who interact with these systems.
Prerequisites: junior standing, BIO SCI 150(P), and CHEM 102(P); or consent of instructor; or graduate standing.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 510 Economics, Policy and Management of Water
3 cr. Undergraduate/Graduate.
The impact of economics, policy and management decisions on our freshwater resources and how science and economics affect these decisions.
Prerequisites: junior standing and FRSHWTR 391(P); or consent of instructor; or graduate standing.
Last Taught: Spring 2025, Fall 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 510G Economics, Policy and Management of Water
3 cr. Undergraduate/Graduate.
The impact of economics, policy and management decisions on our freshwater resources and how science and economics affect these decisions.
Prerequisites: junior standing and FRSHWTR 391(P); or consent of instructor; or graduate standing.
Last Taught: Spring 2025, Fall 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 511 Ichthyology
3 cr. Undergraduate/Graduate.
The diverse biology of fishes focusing on behavioral, biomechanical, genetic, and physiological adaptions to diverse ecological systems.
Prerequisites: junior standing and BIO SCI 152(P); or consent of instructor; or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 511G Ichthyology
3 cr. Undergraduate/Graduate.
The diverse biology of fishes focusing on behavioral, biomechanical, genetic, and physiological adaptions to diverse ecological systems.
Prerequisites: junior standing and BIO SCI 152(P); or consent of instructor; or graduate standing.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 512 Freshwater Sciences Practicum:
2-4 cr. Undergraduate/Graduate.
Diverse opportunities for practical, hands-on experience in the practice of freshwater science with emphasis on team work, problem solving, field work, and dissemination of results.
Prerequisites: junior standing, FRSHWTR 502(P), and FRSHWTR 504(P); or consent of instructor.
Course Rules: May be retaken with change in topic to 9 cr max.
Last Taught: Spring 2024, Summer 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 512G Freshwater Sciences Practicum:
2-4 cr. Undergraduate/Graduate.
Diverse opportunities for practical, hands-on experience in the practice of freshwater science with emphasis on team work, problem solving, field work, and dissemination of results.
Prerequisites: junior standing, FRSHWTR 502(P), and FRSHWTR 504(P); or consent of instructor.
Course Rules: May be retaken with change in topic to 9 cr max.
Last Taught: Spring 2024, Summer 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 513 Field Experimentation and Analysis in Freshwater Sciences
3 cr. Undergraduate/Graduate.
Student acquisition of comprehensive investigative procedures in freshwater ecology focusing on field and laboratory interactive assignments.
Prerequisites: jr st; Bio Sci 152(P); Chem 104(P); or grad st.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 513G Field Experimentation and Analysis in Freshwater Sciences
3 cr. Undergraduate/Graduate.
Student acquisition of comprehensive investigative procedures in freshwater ecology focusing on field and laboratory interactive assignments.
Prerequisites: jr st; Bio Sci 152(P); Chem 104(P); or grad st.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 514 Analytical Techniques in Freshwater Sciences
3 cr. Undergraduate/Graduate.
Modern analytical techniques and genomics principles and methods in freshwater sciences.
Prerequisites: jr st; Bio Sci 152(P); Chem 104(P); or grad st.
Course Rules: Counts as repeat of Frshwtr 650 w/same topic.
Last Taught: Spring 2025, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 514G Analytical Techniques in Freshwater Sciences
3 cr. Undergraduate/Graduate.
Modern analytical techniques and genomics principles and methods in freshwater sciences.
Prerequisites: jr st; Bio Sci 152(P); Chem 104(P); or grad st.
Course Rules: Counts as repeat of Frshwtr 650 w/same topic.
Last Taught: Spring 2025, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 524 Introduction to Stable and Radioactive Isotopes
3 cr. Undergraduate/Graduate.
Principles and applications of stable and radioactive isotopes and other biogeochemical tracers in aquatic environments.
Prerequisites: junior standing, CHEM 102(P), and CHEM 104(P); or graduate standing; or consent of instructor.
Last Taught: Spring 2021, Spring 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 524G Introduction to Stable and Radioactive Isotopes
3 cr. Undergraduate/Graduate.
Principles and applications of stable and radioactive isotopes and other biogeochemical tracers in aquatic environments.
Prerequisites: junior standing, CHEM 102(P), and CHEM 104(P); or graduate standing; or consent of instructor.
Last Taught: Spring 2021, Spring 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 541 Contaminants of Emerging Concern
3 cr. Undergraduate/Graduate.
Various emerging contaminants such as pharmaceuticals, plasticizers, nanomaterials, and their use, distribution, potential impacts on the environment.
Prerequisites: junior standing and CHEM 102(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 541G Contaminants of Emerging Concern
3 cr. Undergraduate/Graduate.
Various emerging contaminants such as pharmaceuticals, plasticizers, nanomaterials, and their use, distribution, potential impacts on the environment.
Prerequisites: junior standing and CHEM 102(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 563 Fish Nutrition and Physiology
3 cr. Undergraduate/Graduate.
Understanding fish nutrient requirements and physiology for optimizing fish growth and health in aquaculture; ensuring sustainable production; and contributing to effective fisheries management and conservation.
Prerequisites: junior standing and a grade of C or better in BIO SCI 152(P) and CHEM 104(P); or graduate standing.
Last Taught: Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 563G Fish Nutrition and Physiology
3 cr. Undergraduate/Graduate.
Understanding fish nutrient requirements and physiology for optimizing fish growth and health in aquaculture; ensuring sustainable production; and contributing to effective fisheries management and conservation.
Prerequisites: junior standing and a grade of C or better in BIO SCI 152(P) and CHEM 104(P); or graduate standing.
Last Taught: Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 567 Fish Health
3 cr. Undergraduate/Graduate.
Overview of current and emerging fish diseases and treatment strategies to diagnose and identify pathogens and disease to mitigate spread of disease.
Prerequisites: junior standing, BIO SCI 152(P), and CHEM 104(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 567G Fish Health
3 cr. Undergraduate/Graduate.
Overview of current and emerging fish diseases and treatment strategies to diagnose and identify pathogens and disease to mitigate spread of disease.
Prerequisites: junior standing, BIO SCI 152(P), and CHEM 104(P).
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 569 Fisheries Management
3 cr. Undergraduate/Graduate.
Introduction to fisheries science and management, with a focus on the assessment of fish populations and their habitats.
Prerequisites: junior standing or greater and a grade of C or better in BIO SCI 152(P); or graduate standing; or consent of instructor.
BIO SCI 310 and FRSHWTR 511 are strongly recommended.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 569G Fisheries Management
3 cr. Undergraduate/Graduate.
Introduction to fisheries science and management, with a focus on the assessment of fish populations and their habitats.
Prerequisites: junior standing or greater and a grade of C or better in BIO SCI 152(P); or graduate standing; or consent of instructor. BIO SCI 310 and FRSHWTR 511 are strongly recommended.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 583 Cost-Benefit Analysis for Environmental Resource Decisions
3 cr. Undergraduate/Graduate.
Development and illustration of cost-benefit analysis concepts, principles, and techniques through applications to environmental resource decisions.
Prerequisites: junior standing, FRSHWTR 391(P) and MTHSTAT 215(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 583G Cost-Benefit Analysis for Environmental Resource Decisions
3 cr. Undergraduate/Graduate.
Development and illustration of cost-benefit analysis concepts, principles, and techniques through applications to environmental resource decisions.
Prerequisites: junior standing, FRSHWTR 391(P) and MTHSTAT 215(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 585 Applied Water Statistics and Data Manipulation
3 cr. Undergraduate/Graduate.
Principles of data analysis, probability, and statistical inference are developed and applied to freshwater science and policy issues using the R software environment.
Prerequisites: junior standing and MTHSTAT 215(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic.
Last Taught: Fall 2024, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 585G Applied Water Statistics and Data Manipulation
3 cr. Undergraduate/Graduate.
Principles of data analysis, probability, and statistical inference are developed and applied to freshwater science and policy issues using the R software environment.
Prerequisites: junior standing and MTHSTAT 215(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic.
Last Taught: Fall 2024, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 640 Sequence Analysis
3 cr. Undergraduate/Graduate.
Molecular biology underlying nucleic and amino acid analyses and the tools available to conduct comparative sequence analysis.
Prerequisites: junior standing, BIO SCI 152(P) and CHEM 104(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 512 with similar topic.
Last Taught: Spring 2023, Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 640G Sequence Analysis
3 cr. Undergraduate/Graduate.
Molecular biology underlying nucleic and amino acid analyses and the tools available to conduct comparative sequence analysis.
Prerequisites: junior standing, BIO SCI 152(P) and CHEM 104(P); or consent of instructor; or graduate standing.
Course Rules: Counts as repeat of FRSHWTR 512 with similar topic.
Last Taught: Spring 2023, Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 650 Topics in Freshwater Sciences:
1-3 cr. Undergraduate/Graduate.
Current issues in freshwater sciences.
Prerequisites: junior standing.
Course Rules: May be retaken with change in topic to 9 cr max.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 650G Topics in Freshwater Sciences:
1-3 cr. Undergraduate/Graduate.
Current issues in freshwater sciences.
Prerequisites: junior standing.
Course Rules: May be retaken with change in topic to 9 cr max.
Last Taught: Fall 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 660 Professional and Capstone Planning
1 cr. Undergraduate.
Preparation to work and communicate with environmental professionals, agencies, or clients and develop a written proposal to solve an environmental application or problem.
Prerequisites: junior or senior standing in the BS Freshwater program.
Course Rules: Repeat required for students who do not pass.
Last Taught: Spring 2025, Spring 2024, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 661 Undergraduate Capstone
3 cr. Undergraduate.
Student teams develop analytical solutions to a freshwater or environmental problem in a multidisciplinary framework and in collaboration with environmental professionals, agencies, or clients.
Prerequisites: junior standing, FRSHWTR 660(P), and consent of instructor.
Last Taught: Fall 2025, Fall 2024, Fall 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 662 Thesis Research Planning and Proposal Development
1 cr. Undergraduate.
Prepares students for their thesis research through the process of writing a research proposal and understanding how to write a scientific paper.
Prerequisites: junior standing and completion of 24 credits in Freshwater Sciences, or instructor permission.
Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 663 Undergraduate Research and Thesis
3 cr. Undergraduate.
Intensive independent study course for students undertaking the research and writing of a senior thesis.
Prerequisites: FRSHWTR 662(P).
Last Taught: Spring 2025, Spring 2024, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 690 Undergraduate Seminar in Freshwater Sciences:
1-3 cr. Undergraduate.
Seminar on topics of current interest in freshwater sciences.
Prerequisites: jr st.
Course Rules: May be retaken w/chg in topic to 9 cr max.
Last Taught: Spring 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 695 Independent Study in Freshwater Sciences for Biological Sciences Students
1-3 cr. Undergraduate.
Independent and original research on a topic not available as a regular course; conducted under the direction of faculty or staff scientist from the School of Freshwater Science.
Prerequisites: junior standing, BIO SCI 325(P), one of the following: BIO SCI 310(P), BIO SCI 315(P), BIO SCI 316(P), or BIO SCI 383(P); 2.50 GPA, and written consent of instructor, department chair, and assistant dean for student academic services.
Course Rules: BIO SCI 695 and FRSHWTR 695 are jointly offered and count as repeats of one another. May be retaken to 6 cr max. Does not count as a biological sciences lab course.
Last Taught: Spring 2025, Spring 2023, Fall 2020, Summer 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 699 Independent Study for Undergraduates
1-3 cr. Undergraduate.
Independent study on a topic not available as a regular course; conducted under the supervision of a faculty member; requires approved study proposal.
Prerequisites: jr st; cons instr.
Course Rules: May be retaken to 6 cr max.
Last Taught: Summer 2024, Fall 2023, Summer 2023, Spring 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 781 Water Law for Scientists and Policy Makers
3 cr. Graduate.
The course is formatted to provide five (5) classes each on the Clean Water Act and basic common law concepts of Water Law; The Great Lakes Compact; and Wisconsin's Groundwater Protection Act. Counts as repeat of Frsh Wtr 650 with similar topic.
Prerequisites: grad st.
Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 784 Water Consulting Experience
3 cr. Graduate.
Diverse opportunities for practical, hands-on experience in the consulting practice of freshwater science and policy with emphasis on team work, problem solving, research and writing, and presentation of results.
Prerequisites: graduate standing.
Course Rules: Counts as repeat of FRSHWTR 512 with the topic Freshwater Policy and Management.
Last Taught: Spring 2025.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 810 Professional Development for Water Leaders
3 cr. Graduate.
Exploration of skill set needed for lifelong career development: research ethics, communications, teamwork, interpersonal relationships, administration, entrepreneurship, project management, and leadership.
Prerequisites: Counts as repeat of FrshWtr 650 with similar topic. Prereq grad st.
Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 888 Candidate for Degree
0 cr. Graduate.
Available for grad students who must meet minimum credit load requirement.
Prerequisites: graduate standing.
Course Rules: Fee for 1 cr assessed; unit does not count towards credit load for Fin Aid. Repeatable. Satisfactory/Unsatisfactory only.
Last Taught: Fall 2025, Summer 2023, Spring 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 890 Science Communication
3 cr. Graduate.
Effective communication of science behind critical water issues at different levels of complexity and to diverse audiences.
Prerequisites: graduate standing.
Course Rules: Counts as repeat of FRSHWTR 650 with similar topic. Counts as repeat of ENGLISH 890 for students in the freshwater programs.
Last Taught: Spring 2025, Spring 2024, Fall 2022, Fall 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 900 Colloquium in Freshwater Sciences
1 cr. Graduate.
Lectures by staff and visitors on research in various areas of freshwater sciences.
Prerequisites: grad st.
Course Rules: Retakable up to 2 cr.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 901 Seminar in Freshwater Sciences:
1-3 cr. Graduate.
Seminar on topics of current interest in freshwater sciences.
Prerequisites: grad st.
Course Rules: May be repeated w/ chg in topic to 9 cr max.
Last Taught: Fall 2018, Spring 2018, Fall 2017, Spring 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 980 Graduate Internship
1-3 cr. Graduate.
Students earn credits for serving in an internship that involves work related to freshwater sciences disciplines.
Prerequisites: graduate standing and consent of instructor.
Course Rules: Retakable to 6 cr max. Satisfactory/Unsatisfactory only.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 985 Master's Research and Thesis
1-6 cr. Graduate.
Research and writing of the master's thesis under the supervision of the major professor.
Prerequisites: grad st; cons instr.
Last Taught: Fall 2025, Spring 2025, Spring 2024, Fall 2023.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 990 Doctoral Research and Dissertation
1-9 cr. Graduate.
Research and writing of the doctoral dissertation under the supervision of the major professor.
Prerequisites: grad st; cons instr.
Last Taught: Fall 2025, Spring 2025, Fall 2024, Summer 2024.
Current Offerings: https://catalog.uwm.edu/course-search/

FRSHWTR 999 Independent Study
1-3 cr. Graduate.
For graduate students unable to secure needed content in regular courses.
Prerequisites: grad st; cons instr.
Course Rules: Retakable w/ chg in topic to 6 cr max.
Last Taught: Fall 2025, Spring 2025, Fall 2023, Spring 2023.
Current Offerings: https://catalog.uwm.edu/course-search/