Water Science

(Bachelor of Science)

Overview of the Program

The UW-Green Bay Water Science program is an integrated program designed to provide students with the tools necessary to solve the water related challenges of today and tomorrow. Students may complete program requirements in four years. The curriculum is interdisciplinary, with a core set of courses drawn from geoscience, chemistry, environmental science, biology, physics, math and statistics, and public and environmental affairs. In addition, a diverse set of elective courses allow students to focus on subdisciplines in water science that can meet their career needs and interests. The major requirements are comprised of 71 credits, which include 33 credits of supporting courses, 22 credits of upper level core courses, and 16 credits of upper level electives. The comprehensive major has a principal focus on water's role in natural processes in Earth's systems. These skills include a solid understanding of the chemistry, surface water hydrology, groundwater, and biology of freshwater systems. UW-Green Bay Water Science majors have opportunities to work as research assistants on faculty projects, develop internships, or to conduct their own independent projects. UW-Green Bay faculty members are very active in research on water and wastewater treatment, runoff pollution, stream hydrology, groundwater quantity and quality, limnology, and aquatic ecology.

Student Learning Outcomes and Program Objectives

1. Students will be able to describe the role water plays in the lithosphere, hydrosphere, cryosphere, atmosphere, and biosphere, with emphasis on interactions between these reservoirs.
2. Students will apply the scientific method to investigations of hydrologic processes, Earth systems, and interactions among the various physical and biological realms utilizing standard scientific field and laboratory methods.
3. Students will demonstrate an understanding of the hydrology of streams and lake systems and the role water has in landscape#forming processes that act on the Earth's surface.
4. Students will be able to describe the processes of and importance of groundwater flow and aquifer systems.
5. Students will be able to compare chemical interactions that occur in various hydrologic settings and their importance to water resources, geological and biological systems, and water/wastewater treatment.
6. Students will be able to describe the role water plays in atmospheric systems and the climate system.
7. Students will be able to describe the interactions between water systems and ecosystems.
8. Students will be able to describe the challenges of maintaining surface and ground water quality.
9. Students will apply their knowledge base and research skills to current issues pertaining to water resources, management, and remediation, with emphasis on related economic, social, and public policy dimensions.
10. Students will analyze, interpret, and report on laboratory and field findings using appropriate statistical techniques and computer applications.

Major Area of Emphasis (http://catalog.uwgb.edu/undergraduate/programs/water/major/)

Students must complete requirements in one of the following areas of emphasis: (http://catalog.uwgb.edu/undergraduate/programs/water/major/)

- Water Science (http://catalog.uwgb.edu/undergraduate/programs/water/major/)
- Water Science (Accelerated) - Integrated with graduate Environmental Science & Policy program (http://catalog.uwgb.edu/undergraduate/programs/water/major/)

Curriculum Guide

The following is an example of a four-year Water Science program and is a representation of one possible pathway. Students are encouraged to plan ahead and check with your advisor to ensure that they have the most accurate and up-to-date information available about a particular four-year degree option. Because some courses are fall/spring and even/odd year basis, timing of certain courses may vary. Students are encouraged to consider a minor that pairs well with Water Science. 120 credits necessary to graduate.

Course	Title	Credits
Freshman		
Fall		
WATER 201	Introduction to Water Science	3
GEOSCI 202	Physical Geology	4
First Year Seminar		3
English Comp 100 or Gen Ed		3
Gen Ed or Math Course		3
	Credits	**16**

Spring		
BIOLOGY 203	Principles of Biology: Organisms and Evolution	3
BIOLOGY 204	Principles of Biology Lab: Organisms and Evolution	1
GEOSCI 222	Ocean of Air: Weather and Climate	3
MATH 260	Introductory Statistics	4
Gen Ed		4
	Credits	**15**
Sophomore		
Fall		
CHEM 211	Principles of Chemistry I	4
CHEM 213	Principles of Chemistry I Laboratory	1
ENV SCI 330	Hydrology	3
ENV SCI 401 or ENV SCI 403	Stream Ecology or Limnology	4
Gen Ed or Elective		4
	Credits	**16**
Spring		
CHEM 212	Principles of Chemistry II	4
CHEM 214	Principles of Chemistry II Laboratory	1
ENV SCI 335	Water and Waste Water Treatment	3
ENV SCI 337	Environmental GIS	3
Gen Ed or Elective		4
	Credits	**15**
Junior		
Fall		
ENV SCI 433 or EPP 351	Ground Water: Resources and Regulations [1] or Water Resources Policy and Management	3
PHYSICS 103 or PHYSICS 201	Fundamentals of Physics I or Principles of Physics I	4
PHYSICS 203	Introductory Physics Lab I	1
WATER 444	Aqueous Geochemistry	3
Elective		4
	Credits	**15**
Spring		
EPP 351 or ENV SCI 433	Water Resources Policy and Management or Ground Water: Resources and Regulations	3
GEOSCI 432	Hydrogeology	3
WATER 321	Stable Isotopes in the Environment (Recommended)	1
Elective		6
Gen Ed		3
	Credits	**16**
Senior		
Fall		
WATER 498 or WATER 497	Independent Study (Recommended) or Internship	1-4
ENV SCI 403 or ENV SCI 401	Limnology or Stream Ecology	4
Elective		4
Elective		4
	Credits	**13-16**
Spring		
Electives		8
Gen Ed		6
WATER 497 or WATER 498	Internship (Recommended) or Independent Study	1-3
	Credits	**15-17**
	Total Credits	**121-126**

1 Choose one of these two courses; check periodicity closely.

Faculty

Rebecca Abler; Professor; Ph.D., Virginia Polytechnic Institute and State University

Patrick S Forsythe; Professor; Ph.D., Michigan State University*

Richard Hein; Professor; Ph.D., University of Rhode Island

John A Luczaj; Professor; Ph.D., Johns Hopkins University*

Patricia A Terry; Professor; Ph.D., University of Colorado*

Michael E Zorn; Professor; Ph.D., University of Wisconsin - Madison*

Michael Holly; Associate Professor; Ph.D., University of Wisconsin - Madison

Erin Berns-Herrboldt; Assistant Professor; Ph.D., University of Texas

Kpoti (Stefan) Gunn; Assistant Professor; Ph.D., Ohio State University

Christopher Houghton; Assistant Teaching Professor; Ph.D., University of Wisconsin - Milwaukee