

Minnesota North College – Vermilion Campus

Watershed Science

Academic Year 2023-24
Associate of Science (60 credits)

First Year

| FALL SEMESTER 2023 – 15 credits | | Prerequisites | Credits | Hr Lc/Lb |
|---|--|---------------|---------|----------|
| BIOL 1561 – General Biology of Cells (MnTC Goal 3) | | (CLR) | 4 | (3/2) |
| CHEM 1200 – Introduction to Chemistry (MnTC Goals 3 & 10) | | (MATH 0200) | 4 | (3/2) |
| OR CHEM 1521 – General Chemistry 1 (MnTC Goal 3) | | (MATH 1220) | | |
| ENGL 1231 – College Composition 1 (MnTC Goal 1) | | (CLW) | 4 | |
| WSHD(WQAL) 1656 – Environmental Compliance | | (CLR, CLW) | 3 | |

| SPRING SEMESTER 2024 – 14 credits | | Prerequisites | Credits | Hr Lc/Lb |
|--|--|----------------------------|---------|----------|
| BIOL 1562 – General Biology of Organisms (MnTC Goals 3 & 10) | | (BIOL1561) | 4 | (3/2) |
| NRT 2315 – Introduction to Geographic Information Systems | | (NRT1211 or WSHD/WQAL1656) | 2 | (1/2) |
| PDEV 1130 – Employment Strategies | | | 1 | |
| WSHD(WQAL) 1255 – Water Resource Field Visits | | | 2 | (0/4) |
| WSHD(WQAL) 2265 – Water and Wastewater Analysis 1 | | (CHEM1200 or 1521) | 5 | (2/6) |

Second Year

| FALL SEMESTER 2024 – 14 credits | | Prerequisites | Credits | Hr Lc/Lb |
|--|--|------------------------|---------|----------|
| BIOL/NRT 2449 – Ecology and Management of Northern Fishes | | (BIOL1200 or BIOL1561) | 2 | (1/2) |
| NRT 1211 – Forest Field Skills | | (MATH91; READ92) | 3 | (2/2) |
| NRT/WSHD 2258 – Soils and Hydrology | | (BIOL1200 or BIOL1561) | 3 | (2/2) |
| PHIL 1230 – Ethics (MnTC Goals 6 & 9) | | (CLR, CLW) | 3 | |
| OR SOC 1200 – Introduction to Sociology (MnTC Goals 5 & 7) | | (CLR) | | |
| POLS 1320 – State and Local Government (fall) (MnTC Goals 5 & 9) | | (CLR) | 3 | |

| SPRING SEMESTER 2025 – 17 credits | | Prerequisites | Credits | Hr Lc/Lb |
|--|--|--|---------|----------|
| BIOL/NRT 2455 – Limnology (MnTC Goal 3?) | | (BIOL1200 or 1561) | 3 | (2/2) |
| GEOL 1215 – Physical Geology (MnTC Goal 3) | | (CLR) | 4 | (3/2) |
| MATH 1215 – Statistics (MnTC Goal 4) | | (MATH0200) | 4 | |
| NSCI 1225 – Meteorology (even years) (MnTC Goal 3) | | (CLR) | 3 | |
| WSHD 2267 – Watershed Management | | (WQAL/WSHD1656; NRT2315 or concurrently) | 3 | (2/2) |

Additional Recommended Courses

Students planning to transfer should take both CHEM 1521 General Chemistry 1 and CHEM 1522 General Chemistry 2.

Work experience can be gained by enrolling in WSHD 2220 Water Resources Internship (WSHD 1656; WSHD 2265; 2.0 GPA) offered summer term.

Program Description

The Watershed Science AS degree program is designed to prepare students for positions in field data collections, analysis, groundwater sampling, streamflow monitoring, and laboratory analysis. Graduates may elect to continue their education toward a baccalaureate degree. Optional field experience in the form of the Water Resources Internship and elected between the first and second year, is strongly recommended to demonstrate work potential and enhance employability.

Occupational Titles

Watershed graduates are hired by water and resource agencies primarily to conduct field work (data collection and analysis). Work varies from agency to agency but likely will focus on water activities such as stream gaging, groundwater sampling, biological and chemical analyses, wetland delineation, habitat restoration, fisheries support and aquatic work. While some work is performed by consultants, most is governmental work with agencies such as USGS, Departments of Natural Resources, Soil and Water Conservation Districts, and others. The career outlook is extremely promising right now and should continue to be as water and environmental trends continue. Occupational titles include Hydrologic Technician, Hydrologist, Watershed Planner, Engineering Technician, Restoration Specialist, Watershed Science Educator, Environmental Planner or Consultant, and others.

Watershed Science A.S.

Program Learning Outcomes

Graduates of this program will:

1. Demonstrate the principles and responsibilities of managing water resources
2. Obtain and utilize local, state and federal laws to demonstrate how policy changes affect the environment
3. Ability to work as an individual and in teams to collect information, identify possible alternatives and select the best solution to hydrologic/hydraulic situations
4. Ability to describe important water concepts relating to laboratory analyses, water/wastewater operations, hydraulic principles, watersheds, and environmental law and policy
5. Ability to apply technology and fundamental principles of water resource technology through research reports, laboratory procedures, and field applications
6. Ability to use the scientific method: hypothesize, test, evaluate and select an appropriate solution through theory and practical applications.

Transfer and Articulation Agreements

Students may wish to transfer to a four-year college or university following completion of the Watershed Science AS degree program. This program will be articulated with Bemidji State University's Bachelors of Science Degree in Aquatic Biology with Emphasis in Wetland Ecology. An Articulation Agreement with the University of Minnesota – Crookston is in the renewal process. Also, a specific Transfer Guide for the University of Wisconsin-Stevens Point will facilitate transfer of this program to one of several related programs there.

Program Faculty Contact

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