

FRESHWATER STUDIES, ASSOCIATE IN APPLIED SCIENCE DEGREE

NMC Code 490

The Freshwater Studies program is offered by NMC's Great Lakes Water Studies Institute. The program is designed to prepare students for both current and emerging career pathways in water related fields. The Freshwater Studies degree program combines unique courses and opportunities for field experiences available through Northwestern Michigan College and our University partners. In addition to the partners in the Great Lakes region, our program has collaborators in selected sites overseas. This freshwater focused program has an interdisciplinary approach designed to offer students the ability to gain unique competencies and credentials of value. The core program of study includes Introduction to Freshwater Studies, Watershed Science, Geographic Information Systems (GIS), Oceanography, Meteorology and Climatology, Water Policy and Sustainability, and an Internship experience either locally or overseas. The degree is intended both for students who plan to enter professional fields as well as those who wish to further their studies and complete a bachelor's degree with university partners located in Traverse City and offsite.

Requirements

Major Requirements

Course	Title	Credits
General Education Requirements		
ENG 111	English Composition	4
Select one of the following:		3-4
BUS 231	Professional Communications	
ENG 112	English Composition	
ENG 220	Technical Writing	
Select one of the following:		3
PHL 105	Critical Thinking	
PHL 202	Contemporary Ethical Dilemmas	
PHL 203	Environmental Ethics	
Math Competency ¹		
ENV 131	Oceanography	4
GEO 115	Introduction to GIS	3
Core Requirements		
ENV 117	Meteorology & Climatology	4
ENV 140	Watershed Science	4
WSI 105	Intro to Freshwater Studies	3
WSI 230	Water Policy & Sustainability	3
WSI 290	Freshwater Studies Internship	1-3
Approved Elective Courses by Concentrations		28
Total Credits		60-63

¹ Placement into MTH 111 Intermediate Algebra *or* higher, *or* completion of MTH 23 Beginning Algebra with a 2.0 minimum GPA

Approved Elective Courses by Concentrations

You must take 28 credits of approved electives below. You can choose a specified concentration or any combination of 28 credits below.

Economy and Society - NMC Code 492

Course	Title	Credits
BIO 110	Essential Biology	4
BUS 101	Introduction to Business	3
BUS 261	Business Law I	3
or MGT 241	Principles of Management	
ECO 201	Principles of Macroeconomics	3
or ECO 202	Principles of Microeconomics	
MGT 245	Principles of Entrepreneurship	3
MTH 131	Intro to Prob & Stats	3
Total Credits		19

Global Freshwater Policy and Sustainability - NMC Code 491

Course	Title	Credits
BIO 110	Essential Biology	4
GEO 109	World Regional Geography	3
MTH 131	Intro to Prob & Stats	3
SPN 202	Intermediate Spanish II	4
or SPN 227A	Spanish for Environmental Mgmt	
Total Credits		14

Science and Technology - NMC Code 493

Course	Title	Credits
MTH 141	Calculus I	5
BIO 115	Cell,Plant & Ecosystem Biology	4
CHM 150	General Chemistry I	4
PHY 121	General Physics I	4
Total Credits		17

General - NMC Code 490

Course	Title	Credits
ANT 113	Intro to Cultural Anthropology	3
BIO 115	Cell,Plant & Ecosystem Biology	4
BIO 116	Genetic, Evolution, Animal Bio	4
CHM 150	General Chemistry I	4
ECO 202	Principles of Microeconomics	3
MTH 121	College Algebra	4
MTH 131	Intro to Prob & Stats	3
Total Credits		25

Additional Elective Options

Course	Title	Credits
ASL 101	American Sign Language I	4
ASL 102	American Sign Language II	4
ASL 103	American Sign Language III	4
FRN 101	Elementary French I	4

FRN 102	Elementary French II	4
FRN 201	Intermediate French I	4
HUM 116	World Cultures	4
MTH 122	Trigonometry	3
PLS 211	International Relations	3
SPN 101	Elementary Spanish I	4
SPN 102	Elementary Spanish II	4
SPN 201	Intermediate Spanish I	4
WSI 200	GL Research Technologies	3
WSI 210	Underwater Acoustics and Sonar	3
WSI 215	Marine GIS & Data Processing	3
WSI 240	ROV Systems and Operations	3

Summer		
WSI 290	Freshwater Studies Internship	1-3
Credits		1-3
Total Credits		60-63

¹ Placement into MTH 111 (<https://catalog.nmc.edu/archives/2021-2022/search/?P=MTH%20111>) Intermediate Algebra **or** higher, **or** completion of MTH 23 (<https://catalog.nmc.edu/archives/2021-2022/search/?P=MTH%2023>) Beginning Algebra with a minimum 2.0 GPA.

Please consult an NMC Freshwater Studies program advisor for scheduling guidelines.

Minimum Program Requirements 60

Course Sequence Guide

Course	Title	Credits
Year 1		
Fall		
ENG 111	English Composition	4
WSI 105	Intro to Freshwater Studies	3
ENV 140	Watershed Science	4
Approved Elective		3
Math Competency ¹		
Credits		14
Spring		
Select one of the following:		3-4
BUS 231	Professional Communications	
ENG 112	English Composition	
ENG 220	Technical Writing	
ENV 131	Oceanography	4
GEO 115	Introduction to GIS	3
Approved Elective		3
Credits		13-14
Year 2		
Fall		
ENV 117	Meteorology & Climatology	4
WSI 230	Water Policy & Sustainability	3
Approved Elective		9
Credits		16
Spring		
Select one of the following:		3
PHL 105	Critical Thinking	
PHL 202	Contemporary Ethical Dilemmas	
PHL 203	Environmental Ethics (Fall only)	
Approved Elective		13
Credits		16