

EEB 585 -- North Temperate Lakes Ecology

Course led by Dr. Grace Wilkinson, Tentative dates - August 2-9, 2020

Course Description: This is a research-based field trip course to the Northwoods of Wisconsin and the Upper Peninsula of Michigan. This region has a rich history of terrestrial and limnological research as well as an active research community today. In addition to learning about the unique ecosystems of this region and conducting independent field studies, students will have the opportunity to interact with a diverse field of academic and federal scientists working in the Northwoods.

During the spring semester, students will learn about the structure and function of the ecosystems in this north temperate region while iteratively developing a research proposal. The proposed research will combine field data collection and possibly long-term data from the region to address their hypothesis. During the field trip, students conduct their field sampling and analyze the data, culminating in a research presentation at the end of the trip.

Course Objectives: Through this course, students will be able to:

- Identify and understand the drivers and dynamics of north temperate ecosystems
- Formulate a research question and design a study to address their question
- Provide constructive feedback to other scientists on their ideas and writing
- Grow their network and interact with scientists outside their immediate field of interest

Location: University of Notre Dame
Environmental Research Center (UNDERC)

7645 Notre Dame Lane
Land O'Lakes, Wisconsin 54540
<https://underc.nd.edu/underc-east/>



UNDERC is a privately owned environmental research site located in northern Wisconsin and the Upper Peninsula of Michigan. The property has 29 lakes and bogs, streams, a larger river, and numerous terrestrial ecosystems including mixed deciduous and coniferous forest. UNDERC is an active research station with the oldest experimental lakes facility in the world. Teams of limnologists have been studying some of the lakes on the property for over 50 years. An NSF National Ecological Observatory Network (NEON) site was constructed on the property in 2013 and the NSF North Temperate Lakes Long Term Ecological Research (LTER) station is 30 minutes south of UNDERC. Students will have the opportunity to interact with scientists from these groups during the field trip, enriching both the scientific and professional development components of the course.



EEB 585 -- North Temperate Lakes Ecology

Course led by Dr. Grace Wilkinson, Tentative dates - August 2-9, 2020

Lodging at UNDERC includes dormitory-style accommodations with the opportunity to cook and share meals as a group. The dorms are located near the Hank Lab on the shores of Tenderfoot Lake. Additionally, there is a wet lab facility for mesocosm experiments, a classroom for lectures and presentations and a small library on site. Each research lake has a boat available on shore and paddles and life vests are available for users. All lakes are accessible via vehicle on the property.

We will also take advantage of being in one of the most pristine areas of the Midwest by taking an afternoon to explore the Sylvania Wilderness. High Lake, located within the wilderness, has the clearest water of any lake in the Upper Peninsula. We will spend an afternoon canoeing and exploring the old-growth hemlock forests and clear waters of this protected area.



Transportation: We will travel to UNDERC in ISU vehicles which will also be used for transportation to research sites around the property and throughout the Northwoods. Students will need to be certified to drive state vehicles.

Spring 2020 Syllabus: The class will meet eight times for 1.5 hours each to learn about Northwoods ecosystems and develop independent research proposals. For weeks 3-7, the class period will be split into lecture (2/3) and peer-review of proposals (1/3) giving students the opportunity to learn how to constructively critique scientific writing and research ideas.

Week	TOPIC	HOMEWORK
1	Introduction to the Northwoods	(assigned reading)
2	Ecosystems of the Northwoods	(assigned reading)
<i>Spring Break -- No Class</i>		
3	Structure & Function of Northwoods Aquatic Ecosystems	Select research project biome, 2 referenced paragraphs
4	Structure & Function of Northwoods Terrestrial Ecosystems	Select research topic, 2-3 referenced paragraphs
5	History of Research & Facilities in the Northwoods	Propose research questions, Hypotheses, identify knowledge gap; 1 paragraph
6	Organisms of the Northwoods	Propose research methods for field, lab and analysis
7	Forces of Change in the Northwoods	Draft project proposal
8	Student Project Proposal Presentations	Research supply list; revised proposal

EEB 585 -- North Temperate Lakes Ecology

Course led by Dr. Grace Wilkinson, Tentative dates - August 2-9, 2020

Field Trip Schedule: The tentative schedule of activities during the field trip. Students will have the majority of the day to work on their research projects and explore the property. Lectures, meeting with staff scientists at local research stations, and other enrichment activities are generally planned for the evenings.

DATE	MORNING	AFTERNOON	EVENING
<i>Sunday, Aug 2nd</i>	Travel to UNDERC		Property orientation
<i>Monday, Aug 3rd</i>	Site orientation, project set-up	Field work/Lab work	Lecture: The human history of the Northwoods
<i>Tuesday, Aug 4th</i>	Field work/Lab work	Paddle and Portage trip through Sylvania Wilderness	
<i>Wednesday, Aug 5th</i>	Field work/Lab work	Meeting with NEON site leaders at UNDERC	Visit NTL LTER Site + Attend Weekly Seminar
<i>Thursday, Aug 6th</i>	Field work/ Lab work	Field work/Lab work	Lecture: Using ecological scenarios to explore the future
<i>Friday, Aug 7th</i>	Field work/Lab work	Data Analysis & Presentation Prep	Fish Fry & Socializing with UNDERC scientists
<i>Saturday, Aug 8th</i>	Data Analysis & Presentation Prep	Research Presentations	Final Dinner & Celebration
<i>Sunday, Aug 9th</i>	Clean up + pack	Return to Ames	