

Wetland Ecology and Management

Pymatuning Laboratory of Ecology, Session 1, May 2020

“Most of earth is covered by water and is blue. Most of the rest is green. Wetland ecology is the study of where green meets blue.” (modified from Keddy 2010)



Instructor

Robert Booth, Lehigh University

Email: rkb205@lehigh.edu

Twitter: [@LehighEcology](https://twitter.com/LehighEcology)

Course Description

This field-intensive course will provide you with a foundational understanding of wetland ecosystems, including their biota, hydrology, and soils. We will examine the ecology of marshes, swamps, and peatlands, investigate the factors controlling wetland structure and function, and learn about responses and feedbacks of wetlands to natural and human-induced environmental variability. Some specific topics include wetland classification and delineation, origin and development of wetlands, biotic adaptations to the wetland environment, wetland ecohydrology, wetland biogeochemistry and microbial communities, wetland vegetation dynamics, and wetland management and restoration. You will also learn common wetland plants and other wetland organisms. We will be in the field examining wetlands every day...prepare to get wet!

Primary Learning Objectives

- (1) (Knowledge and Context) Describe the biophysical structure of wetlands, the major ecological processes that occur in wetlands, and the environmental factors that control the structure and function of wetland ecosystems. Understand the approaches and methods that scientists use to study the ecology of wetlands.
- (2) (Knowledge and Application) Acquire an understanding of the responses and feedbacks of wetlands to environmental variability and change at a range of temporal and spatial scales, and use this understanding as a foundation to discuss potential future changes in these ecosystems.
- (3) (Application) Apply knowledge of wetland ecosystems to address the specific challenges of wetland management and restoration, and directly apply your understanding of soils, vegetation, and hydrology to perform and defend field-based wetland delineation.

Text

- (M&G) Mitsch & Gosselink. 2015. *Wetlands*. 5th Edition John Wiley and Sons.

Assessment

Midterm exam – 20% of course grade

Final exam – 30% of course grade

Participation in discussions/activities/fieldwork – 10% of course grade

Assignments and summaries/reports – 25% of course of grade

Plant collection - 15% of course grade

Lab activities – 20% of course of grade

Field trips

- Almost every day we will be in the field. Appropriate field clothes are required. Raingear, sunblock, water bottle, and bug repellent are all highly recommended.
- Waders will be provided. At some sites knee-high rubber boots or an old pair of boots/sneakers will suffice. When we return from fieldtrips, you must wash off your waders/boots with the hose behind the PLE stockroom.
- A field notebook and pencil (not a pen) are required.

Plant collection

You are required to make and turn in a plant collection of no less than 30 wetland species, including at least 5 species that were not identified by the instructor. Plants must be identified (typically to the species level), pressed, linked with appropriate site information, and the wetland indicator status of the plant must be provided (for our region). Specimens may be collected during field trips, as long as it doesn't interfere with field activities. However, collections are not allowed from every wetland we visit - we will let you know where collecting is permitted.