

WETLANDS ECOLOGY
(E440, Autumn 2005)

Lecture: Mon. & Wed., 9:30-10:45 AM, SPEA room 272

Instructor: Christopher Craft

Office: SPEA, Room 410J

Office hours: Mon. & Wed., 11-11:45 AM

Description: *Wetlands Ecology* emphasizes the ecosystem structure and function of freshwater and estuarine wetlands, the ecological services they provide and their value to society. The course focuses on seven basic areas:

(1) *Characteristics used to identify wetlands* (vegetation, soils, hydrology)

(2) *Geomorphology and Classification of wetlands*

(3) *Plant and animal adaptations to anaerobic conditions*

(4) *Wetland community structure and ecosystem processes*

(5) *Biogeochemistry of wetlands*

(6) *Wetland functions and values*

(7) *Management of wetlands, including jurisdictional wetland delineation, hydrogeomorphic (HGM) assessment of wetland function and wetland creation & restoration.*

The information will be applied to discuss the role of wetlands as a component of ecosystems, landscapes and the biosphere, their importance as a sustainable resource (for water resources and water quality, wildlife habitat and preservation of natural areas) and their economic and aesthetic values to society.

Readings: *Wetlands* by W.J. Mitsch and J.G. Gosselink (2000). The textbook readings will be supplemented by a course-pak that can be purchased from the TIS bookstore and by reserve readings.

Grading:

You will be evaluated on your knowledge of the material based on 2 quizzes, term paper, group delineation project and (individual) HGM project. There will be 4 half-day field labs and 5 half-day field exercises. The purpose of the field labs is to learn how to identify wetlands from non-wetland areas and to characterize the different types of wetlands. The purpose of the group project is to learn how to delineate a jurisdictional wetland. The delineation exercise will culminate in a group report, including a field presentation that describes the results, including a map of wetland versus non-wetland acreage, of your jurisdictional wetland delineation. In the HGM project, you will collect data to compare wetland function(s) of a natural and degraded forested wetland. The data will be collected as a group but the reports will be written and turned in individually.

Students will complete a short (10-15 pages double spaced) term paper by October 28. You should select a topic carefully, based on your own interests (research, policy, etc) as related to some aspect of Wetlands Ecology. Remember, I am interested in quality, not quantity. **The term paper should be an original piece of work and not something that was submitted for credit in another course.** The term paper must be formally organized with subheadings, including an Abstract, Introduction (with a statement of purpose), Results/ Discussion, Conclusions and a Literature Cited. The Literature Cited section should follow the style of the journal *Wetlands*.

Term paper format: Double-spaced, 8-10 pages in length plus references.
20+ references, at least 80% are from the peer-reviewed literature.
Use a scientific journal (e.g. *Wetlands*) as a template for citing and listing references.

Term paper critique:

1. FOCUS on a specific topic.
2. Include some visual aides (e.g. tables and figures).
3. Cite mostly scientific (wetlands, ecological) literature.
4. PROOFREAD your paper.

Note: I DO NOT accept email submission of term papers, lab write-ups, etc.

Grading Criteria:	Quiz #1	(Oct. 3)	20%
	Quiz #2	(Nov. 7)	20%
	Term paper	(due Oct. 28)	20%
	Delineation exercise	(due Nov. 11)	20%
	HGM exercise	(due Dec. 9)	20%

Lecture Schedule:

Date	Topic	Reading assignment
Aug. 29	Overview / Wetlands of the US & World	Mitsch and Gosselink, chapters 1, 2, 3 & 4
Aug. 31	Wetland Vegetation	M & G, chapter 8
Sept. 2	Field Lab (Friendship Road)	
Sept. 5	Wetland Soils	
Sept. 7	Wetland Soils (continued) Wetland Hydrology	M & G, chapter 5
Sept. 9	Field Lab (Griffy Lake)	
Sept. 12	Wetland Hydrology (continued)	M & G, chapter 5
Sept. 14	Geomorphology / Classification of Wetlands	M & G, chapter 21
Sept. 16	Field Lab (Anderson Road)	
Sept. 19	Plant / Animal Adaptations	M & G, chapter 7
Sept. 21	Bottomland, Alluvial & Riparian Forests	M & G, chapters 14 and 15
Sept. 23	No lab	
Sept. 26	Swamps (continued)	M & G, chapters 14 and 15 Reading: Ivory-billed Woodpecker Persists...
Sept. 28	Northern Peatlands	M & G, chapter 13
Sept. 30	Optional lab	
Oct. 3	Quiz #1	
Oct. 5	Freshwater marshes	M & G, chapter 12 Reading: The Wetland Continuum...
Oct. 7	Field Practical	
Oct. 10	Guest Lecture: Constructed Wetlands for Wastewater Treatment: The European Perspective. (Dr. Jan Vymazal, Prague, Czech Republic)	

Oct. 12	Tidal Salt Marshes	M & G, chapter 9, Reserve reading
Oct. 14	No lab	
Oct. 17	Tidal Marshes (continued) / Mangroves	M & G, chapters 10 and 11 Reading: Multiple Stable Isotopes Used...
Oct. 19	Jurisdictional Wetland Delineation	M & G, chapters 18 and 21
Oct. 21	Field lab: Intro to Wetland Delineation	
Oct. 24	Special Lecture: Effects of Climate Change on Soil Properties and Long-term Stability of Tidal Marshes	
Oct. 26	Wetland Biogeochemistry	M & G, chapter 6
Oct. 28	Delineation Exercise TERM PAPERS DUE	
Oct. 31	Wetland Biogeochemistry (continued) / Novel Pathways of Anaerobic Metabolism	M & G, chapter 6
Nov. 2	Wetland Ecosystem Processes (Productivity, Decomposition)	
Nov. 4	Delineation Exercise (continued)	
Nov. 7	Animal Utilization of Wetlands	
Nov. 9	Quiz 2	
Nov. 11	Delineation Exercise (if needed)	
Nov. 14	Wetlands and Carbon Cycling	
Nov. 16	Wetland Functions and Values	M & G, chapter 16 Readings: Value of the World's Ecosystem Services.. Wetlands at Your Service...
Nov. 18	Delineation Field Presentation	
Nov. 21	Wetland Mitigation	M & G, chapter 19 Readings: The SWANCC Decision... Assessing Wetland Mitigation Sites...
Nov. 23	No class (Thanksgiving holiday)	
Nov. 28	Wetland Creation and Restoration	M & G, chapter 19 Readings: Ecological Functions of an Impounded... Forms and Accumulation of Soil P... Hydrologic Regime Controls Soil P...
Nov. 30	HGM Assessment of Wetland Functions	
Dec. 2	Field Exercise (HGM Assessment of Wetland Functions)	

- Dec. 5 Constructed & Natural Wetlands for M & G, chapter 20
Nutrient Removal & Wastewater Treatment
- Dec. 7 Wetlands and Nutrient Enrichment /
Eutrophication
- Dec. 9 HGM Assessment Due**