

COMMON COURSE NUMBER: SWS 2242C

COURSE TITLE: Wetlands Management I

CREDIT HOURS: 3

CONTACT HOURS BREAKDOWN:

Lecture/Discussion 32

Lab 32

Other 0

Contact Hours/Week 4

CATALOG COURSE DESCRIPTION:

Prerequisite: Completion of any of the horticultural biology, zoology, or native plants courses would be helpful and is suggested.

Corequisite: None

This course provides the background to define a wetland using indigenous plant forms, aquatic conditions, geology and applicable laws and regulations. The strategies and techniques needed to maintain natural habitats are outlined. Course consists of classroom and extensive field work. Completion of any of the horticultural biology, zoology, or native plants courses would be helpful and is suggested.

General Education Requirements - Associate of Arts Degree, meets Area(s):

General Education Requirements - Associate in Science Degree, meets Area(s):

UNIT TITLES:

1. Introduction and Definition of a Wetland Ecosystem
2. Hydrophytic Vegetation
3. Hydrology
4. Hydric Soils
5. Wetland Evaluation and Delineation Including Field Techniques and Methods
6. Wetland Permitting and Laws
7. Wetland Benefit Index (Habitat Value and Quality)
8. Wetland Functionality (Wildlife Values)

I. Course Overview:

Upon successful completion of this course, the students should be able to demonstrate the ability to define and delineate wetlands within the criteria of applicable laws. In addition, the student should be able to identify in the field various wetland habitats.

II. Units:

Unit 1. Introduction and Definition of a Wetland Ecosystem

General Outcome:

- 1.0 The students should be able to explain the various definitions of a wetland and compare and contrast the differences that exist within and between the various definitions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 List the agencies involved in wetland regulation and determination.
- 1.2 Compile a list of wetland definitions.
- 1.3 Discuss the importance and inherent value of wetlands.
- 1.4 List and discuss the characteristics inherent in a viable wetland.
- 1.5 Describe the differences between a functioning and non-functioning wetland in general terms.

Unit 2. Hydrophytic Vegetation

General Outcome:

- 2.0 The students should be able to define the forms of wetland vegetation, monocot and dicot, and discuss the significance of each form in defining the wetland status, generally evaluate the forms discussed in terms of successful salvage, source of propagules, transplanting, or rejuvenation of existing habitat.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Discuss aquatic, emergent and upland species in habitat groups of both native and invasive/exotic species.
- 2.2 Utilize both State and Federal plant species lists, determine whether plants are obligate or facultative with regard to wetland and/or upland habitats.
- 2.3 Evaluate a given site using the plants forms extant.
- 2.4 Evaluate a given site in terms of existing viable species, a source of plants for other sites, or a source for propagules.
- 2.5 Identify exotic/invasive species on a given site and estimate the extent of habitat degradation.
- 2.6 Evaluate field ecological techniques and data (transects and quadrants).

Unit 3. Hydrology

General Outcome:

- 3.0 The students should be able to use the information in this unit to determine definitive values for the water sources and their quality, duration and extent of wetland conditions, and make estimates on the water on the water source reliability in the short and long term.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 Estimate the location of water supply for a given site using information from South Florida Water Management, aerial photos, and hydrological information from governmental surveys or Global Information Systems.
- 3.2 Evaluate water source consistency and quality from field observation and sampling.
- 3.3 Develop an estimate of the reliability of given water source using demographic studies, local Land Use Plans and long term weather predictions.
- 3.4 Understand and discuss the conditions that effect seasonability in water levels in South Florida.
- 3.5 Discuss how geologic conditions (fractioning, sink holes) affect local water levels.

Unit 4. Hydric Soils

General Outcome:

- 4.0 The students should be able to recognize soils and substrates that occur in association with wetlands, explain how those soils are constructed, discuss some of the soil chemistry involved, describe the ability of these soils to retain water in various climatic cycles and thereby affect the plant life they support, and relate the role of hydric soils in delineation of a wetland.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Recognize, name and discuss the soil types found in various fresh and salt water wetland habitats.
- 4.2 Determine the pH, salinity, and elemental composition of a given soil sample with the sampling techniques and equipment provided and observed in this class.
- 4.3 Describe in accepted industry vernacular the physical composition of given soil sample (SCS nomenclature).
- 4.4 Discuss the soil sample's propensity to maintain its water-retaining abilities in various seasonal conditions or yearly cycles.
- 4.5 Discuss the plant life commonly found in soils of a given sample, and estimate the sample soil's ability to sustain these plants.
- 4.6 Plot a boundary delineating a specific area as a wetland using soil analysis regardless of current water conditions.
- 4.7 Be able to read soil maps and aerial photography of wetland areas.

Unit 5. Wetland Evaluation and Delineation Including Field Techniques

General Outcome:

5.0 By combining the sampling methods learned above, the students should be able to outline the natural or artificial boundaries of a wetland, and then be able to formalize the location, and develop a profile of a particular site in terms of plant communities, soil types, and surface/subsurface hydrology.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 List the agencies involved in wetland regulation and determination.
- 5.2 Compile a list of wetland definitions.
- 5.3 Discuss the importance and inherent values to wetlands.
- 5.4 Compile a summary of research and collected data.
- 5.5 Define the perimeter of the area on maps or aerial photographs, or with the use of legal survey technology.
- 5.6 Describe or demonstrate the use of Global Positioning Systems equipment in locating and delineating a site.
- 5.7 compile a synopsis of the site, listing viable plant communities.
- 5.8 Compile a sign site in terms of soil conditions.
- 5.9 Compare a sign in terms of hydrologic conditions.
- 5.10 Outline the different field techniques used in a given site.
- 5.11 Evaluate a given site with respect to two different wetland definitions (different agencies).

General Outcome:

6.0 Using their notes, the students should be able to paraphrase and discuss various legal parameters that regulate the determination, acquisition, establishment and management of wetlands.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

6.1 Discuss the role of various governmental agencies involved in wetland regulations.

6.2 File and retrieve codes, statutes, ordinances, and laws on wetlands for a given case study.

6.3 Discuss the laws that effect a given situation related to the jurisdictional involved.

6.4 Describe the procedures necessary to accomplish compliance in various case studies, including variances and eminent domain.

Unit 7. Wetland Benefit Index (Habitat and Quality)

General Outcome:

- 7.0 Using the lists and information compiled in UNIT 5, the students should be able to develop a pattern of micro-habitats and the linking ecosystems within the site. Using this matrix, the student should be able to evaluate the long term value by combining possible corridor implications and square foot area formulae. The student develop a hypothesis on the ability of the area to maintain plant and animal life, water reservoir characteristics, and remain viable in weather cycles of low rainfall.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 7.1 Identify major and micro-habitats and determine their connections.
- 7.2 Find and apply formulas on wildlife ratios developed for habitat evaluation.
- 7.3 Estimate the square surface area of each such habitat and using traditional formulas, determine the life sustaining factors for the site.
- 7.4 Use information from Unit 3 to assemble the long term habitat and hydrological vitality of the site.

Unit 8. Wetland Functionality (Wildlife Values)

General Outcome:

8.0 By using information from Unit 2 and 7, and prerequisites of this course, the students should be able to estimate the sites ability to nurture, attract and retain wildlife forms common to this type of wetland.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 8.1 Look up or develop a model for a natural, viable habitat approximating that of the subject site.
- 8.2 Compare the plant mammal, bird, fish, amphibian macro invertebrate and insect forms existing on the site with the model.
- 8.3 Estimate the potential of the site to naturally renew animal populations from existing gene pools, the corridor concept and possible migration patterns.