

**ENV 298 Section 5
Coastal / Estuarine Wetland Ecology and Management**

Fall 2003 Syllabus

Time: Mondays & Wednesdays 1:00 – 2:15 pm; LSRC Room A211.

Instructor: Dr. James W. Pahl
Room A220 LSRC
Phone 613-8007
Email: jimpahl@duke.edu
Office Hours: 2:30-4:30p MW

TA: Michael Osland
Room A228 LSRC
Phone 360-8004
Email: mjo0@duke.edu

Course Description:

Responsible management of coastal ecosystems is only possible after a thorough understanding of the ecological processes that maintain those systems. This course will focus on ecological processes in vegetated coastal wetlands and adjacent estuarine water bodies. While not required, it is suggested that students either have already taken or concurrently take Wetlands Ecology and Management (ENV 312), as the subject material presented in this class will further develop the general principles presented in ENV 312. Specifically, this course will define how the physical and biogeochemical processes that drive freshwater wetland ecology change along an estuarine salinity gradient, and the resulting effects that these changes have on the ‘living resources’ (fauna and flora) of coastal ecosystems. While this course will primarily be taught using the river-dominated estuaries of the mid-Atlantic region as conceptual model systems, other estuarine systems will be surveyed when appropriate. The lecture & discussion format of this course will be supplemented with (a) guided field trip(s) to Duke Marine Lab and surrounding coastal wetlands. Throughout the semester, students will be introduced to coastal zone management issues, including imminent threats, and federal and state-level programs that are in place to counter these threats to coastal wetlands. Students will participate in multiple sessions of progressively complex case studies based on simulated and ‘real-world’ problems to demonstrate the importance that understanding these ecological processes plays in management of estuarine systems. This will promote critical thinking skills by teaching students to structure a problem, ask the right questions and arrive at a practical solution given the constraints on time and resources.

Course Outline, Fall 2003

I. Physical and chemical properties of estuarine wetlands

- A. Development of estuarine basins
- B. Estuarine circulation and hydrology
- C. Sediment dynamics in estuaries
- D. Properties of estuarine wetland soils
- E. Biogeochemistry of estuarine soils

II. Biological components of estuarine wetlands

- A. Microbial ecology
- B. Primary producers
- C. Decomposition
- D. Exchange of energy between wetlands and the estuary
- E. Plankton
- F. Benthos and nekton

III. Case studies

- A. Coastal North Carolina
- B. Chesapeake Bay
- C. Coastal Louisiana

Significant Academic Dates

September	Monday, 1 st Friday, 5 th	Yes, we have class on Labor Day Drop/add period ends
October	Monday, 6 th Friday, 10 th	Exam on physics, geology and chemistry Mid-semester grades due
	Monday, 13 th	Fall break – no class
	Wednesday, 26 th	Graduate classes end
December	Monday, 1 st – Sunday, 8 th	Reading Period
	Monday, 8 th -13 th	Finals

Course Materials

There is no textbook. Lectures will be augmented by assigned readings posted on the Blackboard page for this course.

Additionally, an outline for each lecture will be posted prior to that lecture on Blackboard. When necessary, some graphs or figures will also be posted onto Blackboard, but the full lectures will not be posted.

Grading

Exams (2)	40%	
Student Presentations (2)	20%	
Student Paper	20%	
Class participation	20%	
Grading scale	86-100	E
	70-85	G
	60-69	S
	< 60	F

Presentations

Students will give two 15- to 20-minute presentations during the semester. The first will be on the National Estuary Program that the student chooses to monitor during the semester. The second will be on a particular subject area within the general lecture schedule and will be a synthesis of 2-3 recent research articles jointly chosen by the instructor and the student.

Student Paper

The student will write a detailed report of approximately 10 pages on a particular aspect of estuarine wetland science or management. The paper topic will be the choice of the student, subject to the approval of the instructor. The exact format of the paper will be discussed later in the semester.

Academic Integrity Policy

Students are reminded of the policies of the university regarding academic integrity, as outlined in the Graduate School's "Standards of Conduct" (<http://www.gradschool.duke.edu/Regulations/standards.htm>).