

## **Estuarine Processes**

MARS 8130 Seminar in Hydrobiology

Fall Semester 2005

James Hollibaugh and Charles Tilburg

**Course Objectives:** To familiarize advanced graduate students with the physical, chemical, geological and biological processes relevant to estuaries and similar shallow water, coastal environments. The course will not cover offshore reefs or atoll lagoons, other than in passing or as appropriate for heuristic purposes. The material may cover freshwater environments linked to, and integral to the function of, estuaries, such as tidal freshwater marshes or rivers discharging into the coastal zone.

**Course Format:** Seminar/discussion section with assigned readings (see Reading List below) that will be discussed the following week, supplemented by lecture material as needed. Students are expected to lead discussion sessions. Attendance is mandatory.

**Grades:** Pass/Fail, with grade based on participation preparation, performance and attendance. Peer-review by other students in the class will contribute to the grade. No exams or term papers.

### **Contact Information**

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### **UGA Honor Code**

Students are expected to act consistently with the Honor Code and Academic Honesty Policy of the University of Georgia. All academic work must meet the standards contained in "A Culture of Honesty". Students are responsible for informing themselves about those standards before performing any academic work. The link to more detailed

information about academic honesty can be found at <http://www.uga.edu/ovpi/honesty/acadhon.htm>.

With specific reference to this course, plagiarism will not be tolerated. Students are expected to read the assigned material, think about it, and prepare their own discussion notes, rather than relying on digests retrieved from the internet or elsewhere. However, properly cited references to review papers or other works that put the assigned reading in perspective are appropriate and welcome.

## **Syllabus**

This course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Month	Date	Day	Lecturer	Lecture Topic	Reading	Notes
August	18	Thursday	Hollibaugh and Tilburg	Intro to Course		
	23	Tuesday	Hollibaugh	What is an Estuary		Charles gone
	25	Thursday				
	30	Tuesday	Tilburg	Water flow and circulation patterns - overview		
September	1	Thursday				Labor Day Holiday
	6	Tuesday	Tilburg	Water and salt budgets		
	8	Thursday				Tim gone
	13	Tuesday	Tilburg	Tidal Processes		
	15	Thursday				
	20	Tuesday	Tilburg	Wind Forcing		
	22	Thursday				Tim gone
	27	Tuesday	Tilburg	Estuarine Modeling		
	29	Thursday				
October	4	Tuesday	Hollibaugh	Chemical properties	Armstrong, Richards	
	6	Thursday				
	11	Tuesday	Hollibaugh	Suspended Sediment	Schoelhammer	
	13	Thursday				Tim gone
	18	Tuesday	Hollibaugh	Ecosystem Metabolism	Hopkinson 1985, Nixon, Kemp et al	
	20	Thursday				
	25	Tuesday	Hollibaugh	Nutrient limitation	Ryther and Dunstan, Cloern and Cole 1987, Malone et al.	
	27	Thursday				Fall Break
November	1	Tuesday	Hollibaugh	Geochemical Models	Smith and Hollibaugh 2005	
	3	Thursday				
	8	Tuesday	Hollibaugh	Estuarine Habitats	Jassby et al 1993, Nichols et al 1984	
	10	Thursday				
	15	Tuesday	Hollibaugh	Estuarine Organisms	Peterson 1902	
	17	Thursday				



## READING LIST

(T) = Tilburg, (H) = Hollibaugh

Cameron. W. M. and D. W. Pritchard. 1963. Estuaries. p. 306-32. In: M. N. Hill [ed. The Sea v. 2. Interscience. New York. NY. (T)

Hansen. D. V. and R. Rattray. 1966. New dimensions in estuary classification. Limnology and Oceanography. 9. 319-326. (T)

Luketina. D. 1998. Simple tidal prism models revisited. Estuarine. Coastal. and Shelf Science. 46. 77-84. (T)

Pritchard. D. W. 1952. Salinity distribution and circulation in the Chesapeake Bay estuarine system. Journal of Marine Research. 9. 106-123. (T)

Pritchard. D. W. 1967. Observations of circulation in coastal plain estuaries. p. 37-44. In G. H. Lauff [ed. Estuaries. American Association for the Advancement of Science. Washington, D.C. (T)

Sheldon. J. E. and M. Alber. 2002. A comparison of residence time calculations using simple compartment models of the Altamaha River Estuary. Georgia. Estuaries. 25. 1304-1317. (T)

Simpson. J. H. 1997. Physical processes in the ROFI regime. Journal of Marine Systems. 12. 3-15. (T)

Wang. D. P. 1979. Wind-driven circulation in the Chesapeake Bay. Winter 1975. Journal of Physical Oceanography. 9. 564-572. (T)

Zheng. L. C. Chen. and H. Liu. 2003. A modeling study of the Satilla River Estuary. Georgia. I: Flooding-drying process and water exchange over the salt marsh-estuary-shelf complex. Estuaries. 26. 651-669. (T)