Hydraulic Engineering Elect Course:

## **CWR 4822/5824: Coastal and Estuarine Hydraulics**

(3 Credit Hours).

Time:	1:15pm -2:30 pm. Tuesday, Thursday. Fall semester, 2006
Classroom:	B136 COE Building, FAMU-FSU College of Engineering
Instructor:	Dr. Wenrui Huang, P.E. (email: whuang@eng.fsu.edu. phone: 410-6199) ( http://www.eng.fsu.edu/~whuang/)
Textbook:	Robert M. Sorensen, 1997. Basic Coastal Engineering, Kluwer Academic Publishers

**Objectives:** Introduce fundamental principles and equations for fluid flow and waves in estuaries and coastal ocean. Apply the principles to solve coastal and estuarine environmental problems such as wave transformations, wave forces on coastal structures, tidal circulation and mixing processes in estuaries, coastal processes, and computer model applications.

## **Topics covered**:

- Hydrodynamic equations for coastal and estuarine flows
- Linear wave theory
- Engineering wave properties: progress waves and standing waves, pressure fields.
- Wave transformation: refraction, diffraction, and reflection.
- Wave forces on coastal structures
- Coastal water level fluctuations: tides, storm surges, long-term sea level changes.
- Estuaries: tidal circulation, mixing and transport, stratified flow, salinity intrusion, flushing.
- Coastal zone processes: nearshore circulation, alongshore sediment transport, shoreline change.
- Computer applications: hydrodynamical modeling using SMS model system, and beach erosion analysis using the latest coastal engineering analysis tools developed by Army Corps of Engineers.





Hydrodynamic modeling