Progress to Date

- Organized objectives and went through multiple iterations of a complex system design, supported by experiments and modeling
- Learned how to interface with TT8 microcontroller, and to create and test electronic circuits
- Experiments: Characterized stability properties of a hull; transmitted and recorded acoustic signals in open water, etc…

Major Objectives for this Fall

- *Additional exposure* to ocean engineering topics
- *Complete the Challenge* by demonstration
- *Understand and interpret field data*, applying principles of ocean engineering
- Give outstanding and <u>robust</u> *oral presentation and written report !*

CHALLENGE STATEMENT FOR 2005 (2.017, 2.019)

Your overall goal is to create a new capability in ocean observation, by constructing a small, autonomous surface vessel system capable of tracking a subsurface acoustic source. In the first part of the subject (2.017), you will perform modeling tasks to support informed decisions, conduct experiments, and test hardware and build it into a hull. In the second part of the course (2.019), you will perform tests and quantify the performance of the system.

PROJECT TECHNICAL GOALS (descending priority)

- Demonstrate a *small, autonomous surface vessel homing to a subsurface acoustic beacon*.
- Demonstrate this in *Sea State 3* conditions.
- Demonstrate *navigation in a global frame*, e.g., GPS, compass.
- Demonstrate *waypoint autopilot* capability.

2.019 Fall 2005: Three+ Months

- *September:* System Development:
  - build up the complete acoustic system and demonstrate it;
  - build up the autonomous vessel and demonstrate it
- *October:* Integration & Field Tests
- *November:* Field Tests if necessary & Data Analysis
- *December:* Data Analysis & Documentation