1. **Department, Course Number, Title**

   ORE 661 Coastal and Harbor Engineering

2. **Designation as a Required or Elective Course**

   Required Course

3. **Course Catalog Description**

   Planning and design of seawalls, groins, jetties, breakwaters, and layout of ports. Design requirements for harbor entrances and channels. Littoral drift and sedimentation problems. Navigation and mooring requirements. Pre: 607 or consent.

4. **Prerequisites**

   - Applied mechanics
   - Engineering economics
   - Fluid mechanics
   - Hydraulics
   - Probability and Statistics
   - Soil Mechanics
   - Wave mechanics

5. **Textbooks and/or Other Reading Material**

   **Textbook:** None

   **Reference books:**
   2. NAVFAC DM 26.1, 26.2, and 26.3

6. **ABET Course Learning Outcomes**

   The course familiarizes students with the planning, design, and maintenance of coastal and harbor structures. Specific learning outcomes include:
   1. Ability to identify, formulate, and solve coastal and harbor engineering problems
   2. Ability to provide optimal designs of coastal structures and harbor facilities
   3. Appreciation of professional and non-technical issues

7. **Topics Covered**

   1. Planning and Design. Problem definition, site characterization and data, alternative evaluation.
   2. Breakwaters. Rubble mound structures (conventional and berm design), caissons, scour protection, and geotechnical consideration.
3. Revetments and Seawalls. Rubble mound structures, caissons, lateral earth pressure, seismic consideration.

8. **Schedule**
   Two 1.25-hour sessions per week.

9. **Contribution of Course to Meeting the Requirements of Criterion 5**

   **Assessment**
   3 design projects (90%)
   Class participation (10%)

   **Usage of Engineering Tools and Computers**

   **Contribution to Professional Component**
   Engineering Science: 1 credit
   Engineering Design: 2 credits

10. **Relationship to Program Outcomes**
    Program Outcome 2: Basic science, mathematics, & engineering
    Program Outcome 4: Ocean engineering specialization
    Program Outcome 5: Use of latest tools in ocean engineering
    Program Outcome 6: Problem formulation & solution
    Program Outcome 7: Design & optimization in ocean engineering
    Program Outcome 9: Professional issues

11. **Prepared by**
    K.F. Cheung, Spring 2009