1. Department, course number, title
ORE 609 Hydrodynamics of Fluid-Body Interaction

2. Designation as a Required or Elective Course
Required Core course

3. Course Catalog Description

4. Prerequisites
Water-Wave Theories (ORE 607)
Basic Fluid Mechanics
Complex Variables
Vector Calculus

5. Textbooks and/or other required material
Lecture Notes by R.C. Ertekin

Reference books
1. Sarpkaya and Isaacson: Mechanics of Wave Forces on Offshore Structures
2. Newman: Marine Hydrodynamics
4. Ippen: Estuary and Coastline Hydrodynamics
5. Mei: The Applied Dynamics of Ocean Surface Waves
6. Abramowitz and Stegun: Handbook of Mathematical Functions
7. Gradshteyn and Ryzhik: Table of Integrals, Series and Products
9. Mase: Continuum Mechanics

6. ABET Course Learning Outcomes
1) Understand the theoretical and experimental principles of fluid-body interaction problems in the oceans,
2) Understand the principles of viscous and ideal flow and be able to apply the principles to problem solving that involves rigid body movements in the oceans, and
3) Understand diffraction, radiation and motions of floating and submerged bodies in deterministic and irregular wave

7. Topics Covered
1) INTRODUCTION
2) DIMENSIONAL ANALYSIS
3) VISCOUS-FLUID FLOW
4) IDEAL-FLUID FLOW
Course Objectives
This course is designed to give ocean engineering students a basic background for the assessment of hydrodynamic loads acting on fixed and floating bodies in regular and irregular waves.