

Course Outline

Fall 2008 - ORE 411 (TR 15:00-16:15 - Holmes 242) BUOYANCY and STABILITY (HYDROSTATICS)

Prof. R.C. ERTEKIN - OFFICE HOURS: TR 13:00-14:30 or by appointment (Holmes Hall 401, Office Tel: 956-6818; Secretary's (Ms. Natalie Nagai) Tel: 956-7572), Eml: ertekin@hawaii.edu

1. INTRODUCTION
2. IRREGULAR SHAPES AND NUMERICAL METHODS
3. BUOYANCY AND STABILITY
4. LIST AND BALLAST FREE-SURFACE AND DENSITY EFFECTS
5. STABILITY AT LARGE ANGLES OF INCLINATION
6. LONGITUDINAL STABILITY, TRIM AND HYDROSTATIC CURVES
7. DRY DOCKING AND GROUNDING
8. STABILITY IN DAMAGED CONDITION (or BILGING)
9. HYDROSTATICS OF OFFSHORE PLATFORMS
10. STABILITY OF SUBMERSIBLES
11. STABILITY CRITERIA AND STANDARDS
12. LONGITUDINAL STRENGTH CALCULATIONS (PRIMARY STRENGTH)
13. LAUNCHING (if time permits)

GRADING: Assignments 30%; Exam I (Midterm) 35%; Exam II (Final) 35% (Final Exam Symbol: 16, December 18, Thursday, 14:15-16:15)

ORE Student Learning Outcomes for ORE 411:

1. Understand the mathematical principles of buoyancy and stability of floating and submerged bodies,
2. Understand the design principles of intact or damaged ships, offshore platforms, or submersibles to overcome external forces that can overturn them, and

3. Understand the safety of vessels during drydocking and grounding, and their longitudinal strength in calm waters.

REFERENCES/RESERVE BOOKS (ORE LIBRARY):

Rawson, K.J. and Tupper, E.C., ``Basic Ship Theory", Vol. 1, Longman Sci. and Tech., 1983.

Papanikolaou, A. "Buoyancy and Stability", J.K.K. Look Lab., Rep. No. 52, 1981.

Benford, H. "Naval Architecture for Non-Naval Architects, 1991.

D'Arcangelo, A.M., "Ship Design and Construction," SNAME, 1969.

Semyonov-Tyan-Shansky, V. "Statics and Dynamics of the Ship," Peace Publishers, Moscow.

Lester, A.R., "Merchant Ship Stability," Butterworths, 1985.

``Principles of Naval Architecture," SNAME, Vol. 1, 1988 or the newer Edition.