Fall 2015

NAME 2160

Brandon Taravella
University of New Orleans

NAME 2160
HYDROSTATICS AND STABILITY
Required (3 credits)

CATALOG DESCRIPTION
Hydrostatic properties, determination of areas, volumes, displacement; and buoyancy of intact and damaged vessels and their stability; stability during dry docking and when grounded; probabilistic damaged stability

PREREQUISITES
NAME 1175 –Naval Architecture Lab
MATH 2124 - Calculus with Analytic Geometry

INSTRUCTOR
Brandon Taravella, PhD., P.E.
Associate Professor
504-280-6643
bmtarave@uno.edu
EN 933
Office Hours: Tu/Th 9:30am to 11:30am, We 1:30pm to 3:30pm

REFERENCE TEXTS AND OTHER MATERIAL
1. INTRODUCTION TO NAVAL ARCHITECTURE by Thomas C. Gillmer and Bruce Johnson, Naval Institute Press, Annapolis, Maryland, 1982.
2. PRINCIPLES OF NAVAL ARCHITECTURE, Second Edition, Edward V. Lewis, Editor, published by The Society of Naval Architects and Marine Engineers, 1988. (Reference)
3. Numerous handouts provided by instructor

STUDENT LEARNING OBJECTIVES
It is the objective of this course to teach the student of naval architecture the numerical tools and analysis methods which are used to determine the "hydrostatic" properties of a floating hull form. These methods include determination of a hull form's attitude (draft, trim and list) when floating in a liquid, the determination of a vessel's basic intact (undamaged) stability characteristics, and the methods used to determine whether a floating vessel has sufficient stability characteristics to comply with the applicable regulatory body requirements for that type of vessel and, if not, the methods used to modify a vessel such that it does. In addition, the numerical methods used to determine a damaged vessel's attitude and stability characteristics, as well as the determination of a vessel's stability when grounded/dry docked are also presented

Each student will be required to prepare a set of calculations of a hull form's "Hydrostatic Properties versus Draft," based on a "Lines Plan" provided to the student.

COURSE TOPICS
Hydrostatic properties, trim and drafts.
Integrating rules and methods used in naval architecture.
Bonjean curves, wetted surface, sectional area curves and form coefficients.
Free surface of liquids, intact transverse stability.
Cross curves of stability and statical stability curves.
The inclining experiment and deadweight survey.
Methods of analyzing a vessel's stability, Rahola criteria.
USCG weather criterion, lifting a weight over the side.
Crowding of passengers, IMO sever wind and rolling.
IMO grain shifting, USCG towline pull criteria.
Stability in a high speed turn, USCG barge criteria.
Stability analysis of a damaged vessel, floodable length calculations.
Probabilistic damaged stability.
Stability when grounded, stability during drydocking.

CLASS/LABORATORY SCHEDULE
This course meets two times a week, for 1.25 hour sessions each class:
Section 001: Tu/Th 2:00pm – 3:15pm Classroom: EN321
Section 002: Tu/Th 12:30pm-1:45pm Classroom: EN321

GRADING
Assignments – 20%
Project – 15%
Test #1 - 20%
Test #2 - 20%
Final Exam - 25%

1 – Late assignments will not be accepted.
2 - All exam preparation and grading by instructor.
3 - Exams may have closed and open book parts

ATTENDANCE POLICY
Roll will be checked every class session. 1 point off final average for all absences beyond 2.

ACADEMIC INTEGRITY
Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu.

STUDENTS WITH DISABILITIES
It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.