

Lecture Note of Naval Architectural Calculation

Ship Stability

Term Project 1

Spring 2018

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Naval Architectural Calculation, Spring 2018, Myung-II Roh

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Overview (1/3)

☑ Objective

- To develop a program for finding the equilibrium position of a barge (rectangular solid) in sea water and visualizing the result

☑ Input

- Length, breadth, and depth of the barge, in m
- Weight of the barge, in ton
- LCG (from AP), TCG (from centerline), and VCG (from baseline) of the barge, in m

☑ Output

- Draft of the barge, in m
- Heel of the barge, in deg
- Trim of the barge, in m (draft at AP – draft at FP)
- LCB (from AP), TCB (from centerline), and VCB (from baseline) of the barge, in m
- GZ curve of the barge (GZ value [m] according to angle of heel [deg])

Overview (2/3)

☑ Requirements

- Input values should be changed freely in your program and output values should be automatically calculated in accordance with the input values.
- If possible, visualize the shape of the barge in 3D and the GZ curve in 2D. Mark the positions of G and B on the barge.
- Use the Right-hand Coordinates. That is, +x is from AP to FP, +y is from starboard to port, and +z is from bottom to deck.

☑ Implementation

- Any program language (C++ or C# [Recommended], Python, BASIC, FORTRAN) or tool (Matlab, MS Excel) can be used.
- However, the grading is different according to the language or tool what you select.
- Evaluate the validity of your program by comparing the results with that of lecture notes and discuss its results in your report.
- **Do not copy! If it is found out, you will get 'F'. Do it yourself!**

☑ Due date: 23:00 on 7th May, 2018

Overview (3/3)

☑ Submissions

- Report for the term project (MS word file)
- Source files including an executable file.
- After compressing all files in one file (e.g., YourStudentNumber.zip) and upload to our eTL homepage.

[Student's Sample]

- Center of Gravity
- Center of Buoyancy

