

**College of Maritime Engineering, and Biological, Oceanical and NNRR
Sciences**

Ship Dynamics

Course project: Ship response to an irregular sea

Feb., 2017

Objective: To analyze the response of a ship selected by the student to an irregular sea.

Process:

- i) Prepare a simplified plan of the general distribution of the ship (use AutoCAD).
- ii) Using program SCORES, calculate the ship's response to regular waves with 1-m amplitude, in the vertical plane. This was developed in a previous homework.
- iii) Calculate the amplitude of the response you are to analyze: vertical acceleration of a certain point along the ship, or relative velocity between ship and water surface at bow or stern. For this, combine them using the amplitude and phase shift produced by SCORES program.
- iv) Calculate the ship Response spectrum, for an adequate sea state (not less than 4). To develop the sea spectral density, employ ITTC two parameter formulation (Brettschneider). With the response spectrum evaluate its moments: m_0 , m_2 and m_4 .
- v) Evaluate the response using standard values, according to the ship type and service. Use published values from PNA vol. III, or similar.
- vi) Extra: prepare a data file to run computer program to show ship response in the vertical plane in regular waves

Report: It must be written in English, maximum of 5 pages long, with Times New Roman 11 type, and evaluated: 25% Aesthetics, 50% Technical content, and 25% Analysis of results and Conclusions.

Dead lines: report to be submitted at the beginning of the final exam: Tuesday february 14th 7h30 am.