College of Maritime Engineering and Marine Sciences

Finite Elements

Course project   **Dec. 21st, 2020**

The objective of this project is to analyze a local structure of a ship applying the Finite Element method using the ANSYS package. The structure is assigned by the instructor to each group, and the possibility of failure in different possible modes, under static load have to determined. Each group must present a proposal explaining the loading conditions to be applied and the standards to determine possibility of failure.

The results of the structural finite element model must first be checked with simple models. Also before analyzing results, convergence to the exact solution must be tested. Then results from the structural analysis may be check against restrictions proposed by pertinent standards.

The written report must be prepared in the attached format, and have no more than 8 pages, including appendages. Include a short comparison of the estimated and really employed number of hours for the project; classify time for i.- information search and problem identification, ii.- geometric and structural models development, iii.- result analysis, iv.- preparation of written report, and, v.- preparation of oral presentation.

Project evaluation:

Written report:
Aesthetics: 10% (Page, figure, table and equation numberings), Completeness and clarity: 15% (Summary, syntax and spelling, preparation of paragraphs, organization of material), and, Analysis of results: 30% (Check, convergence and analysis of results, conclusions and recommendations, and, innovation).

Oral presentation:
Quality of graphic material: 10% (Size of characters, quality of figures, time for presentation), Oral communication: 10% (Pronunciation and time of participation), and, Response to questions 25% (Clarity, technical terminology and correctness).

Plan for development of the project:

- Thursday Jan. 7th, 7-9 am, progress control, geometric model, loadings and standards.
- Thursday Jan. 14th, 7-9 am, evaluation on use of Rhino-ANSYS for static analysis.
- Monday Jan. 18th, 7-9 am, progress control: first structural results.
- Wednesday Jan. 20th, some groups participate in the Naval Engin. Student Technical Sessions.
- Wednesday Jan. 27th, submission of project reports.
- Thursday Jan 28th, oral presentation of projects.