SEMESTER V

OE3015: SHIP STRUCTURAL ANALYSIS

Course Content:

Loads acting on ships; Longitudinal strength-shear force and bending moment-still water and wave loads-deflections unsymmetrical bending-bending stresses and design of mid-ship section, Shear flow analysis of multi-cell sections-Torsional analysis-Warping torsion-Determination of shear and normal stresses-shear lag and effective breadth. Bending of plates-stiffened, plates-orthotropic, plates-large deflection theories and applications. Buckling and ultimate strengths of columns, plates and stiffened panels-concept of effective width-ultimate strength of the hull girder. Finite elements for simple plated structures-use of computer packages for the analysis of ship structures. Review of SDOF systems, Sources of ship vibrations – propeller excited, wave-induced and machinery – Calculation procedure for torsional vibration of propulsion systems – empirical methods. Hull girder vibration. Practicals: 1. Longitudinal strength calculation for ships 2. Transverse strength calculation for ships

Text Books:

1. **Hughes, O.E,** Ship Structural Analysis and Design, SNAME , 2010
2. **Mansour, A. and Liu, D**. Strength of Ships and Ocean Structures, PNA series, SNAME 2008

Reference Books:

1. **Jensen, J.J**, Load and Global Responses of Ships, Elsevier, 2001
2. **Bai, Y**. Marine Structural Design, Elsevier, 2003

Prerequisite: