OE1012: SHIP HYDROSTATICS AND STABILITY

Course Content:

Lines plan and hull form coefficients – Hull forms of different types of ships and boats – Numerical techniques for ship calculations- Bonjean calculation and curves, Hydrostatic particulars – definition and derivations. Weight estimation – lightship, deadweight, centre of gravity, CoG, CoB, Metacentre, Conditions of equilibrium Transverse stability at small angles – angles of heel, trim, list, loll, effects of weight shift, fee surface, wind, waves, grounding; Inclining experiment; Stability at large angles – cross curves of stability, dynamical stability; Ship longitudinal stability; Submarine stability; Stability of modern vehicles. Floodable length, and subdivision; Damaged stability – deterministic and probabilistic approaches and IMO criteria. Capacity and tonnage calculations; Trim and stability booklet Practicals: Lines plan drawing and fairing; Calculation and drawing of ship bonjean and hydrostatic data; Stability calculation and GZ curve; Floodable length calculation and drawing;

Text Books:

1. **Rawson, K.J and Tupper, E.C**. Basic Ship Theory, B&H, 2001
2. **Robert B. Zubaly** , Applied Naval Architecture, Cornell Maritime Press Inc.,2010.
3. **E. C. Tupper**, "Introduction to Naval Architecture", Butterworth-Heinemann, 2013.

Reference Books:

1. **Lewis,E.U,** Principles of Naval Architecture,Vol.1, SNAME, New Jersey, U.S.A, 2010.Thomas Lamp: Ship Design and Control Vol I & II, SNAME.

Prerequisite: