AMSB14 RESISTANCE OF SHIPS

UNIT-1 COMPONENTS OF SHIP RESISTANCE

1.1 Dimensional analysis. Laws of comparison- geometrical, dynamical and kinematical similarity, Newton's, Froude's and Reynold's law, model-ship correlation.

UNIT-2 VISCOUS RESISTANCE

2.1 Turbulent plate friction and plate resistance, viscous pressure resistance, separation and resistance due to separation, influence of curvature of the ship's hull, form factor, hull roughness and its influence on frictional resistance

2.2 Wave making resistance- pressure resistance, ship wave system, interference effects, theoretical calculation of wave making resistance, wave breaking resistance, bulbous bows and their effects

UNIT-3 MODEL TESTING

3.1 Tank testing facilities, testing, prediction of resistance from model tests, extrapolation,

3.2 Froude's concept, laminar influence and tank wall effect, comparison of resistance prediction with results of full scale trials

UNIT-4 DETERMINATION OF RESISTANCE FROM SERIES TEST RESULTS

4.1 Residuary resistance, effect of hull form on resistance, Taylor series, Series 60, B S R A series, S S P A series, etc.; statistical analysis of resistance data,

4.2 Guldhammer- Harvald's and Danckwardt's method. Resistance of planing crafts multi-hull vessels, hovercrafts, hydrofoils, barges and convoy of barges.

UNIT-5 AIR AND WIND RESISTANCE

5.1 Resistance of appendages, Added resistance in waves;

5.2 Resistance in restricted waterways- resistance in shallow water, resistance in canals.

Reference Books:

1. William Froude and Robert Edmund Froude; Resistance of Ships; Primary source edition, Nabu Press, 2014
2. Jonathan Ridley and Chirstopher Patterson; Ship Stability, Powering and Resistance, Vol. 13, Ed. 13, Thomas Reed Publications, 2014
3. William Frederick Durand ; Resistance and Propulsion of Ships, Nabu Press, 2013.
4. D. W. Taylor ; Resistance of Ships and Screw Propulsion, Unikum, 2012.