2.8 30208 BASIC SHIP THEORY

UNIT-1 INTRODUCTION TO SHIPS TYPES OF SHIPS
1.1 Features and functions of cargo ships (General Cargo Ship, Tankers, Container Ships, Bulk Carriers),
1.2 Features and functions of Roll-on Roll-off Ships & Features and functions of passenger vessels
1.3 Features and functions of small craft (Hydrofoil, Hovercraft, Catamaran, SWATH, Planning Craft)
1.4 Features and functions of sea going vessels, inland vessels, Fishing Trawlers, Barges,
1.5 Dredgers, Tugs, LPG Carriers, Principal dimensions. Form coefficients.

UNIT-2 PRINCIPLES OF FLOATATION LAWS OF FLOATATION
2.1 Effect of shifting of weights, addition, removal and suspended weights on centre of gravity.
2.2 Motions of a ship.

UNIT-3 LINES PLAN FAIRING OF LINES,
3.1 Table of offsets.

UNIT-4 INTEGRATION RULES
4.1 Simpson's rule, Trapezoidal rule, Tchebycheff's rule.
4.2 Application of integration rules in determining areas, volumes, centroids, first moments and moment of inertia of water planes of ships.

UNIT-5 SMALL ANGLE STABILITY TYPES OF EQUILIBRIUM. INITIAL STABILITY
5.1 Heeling and righting moments. Statically stability curve-Range of stability, initial GM, maximum GZ, angle of vanishing stability,
5.2 Point of inflexions. Down flooding angle. Effect of various factors on stability
5.3 Calculations of free surface effect. & longitudinal stability and trim.

UNIT-6 INCLINING TEST PURPOSE AND PROCEDURE OF INCLINING EXPERIMENT
6.1 Determination of center of gravity – Inclining experiment.
6.2 Precautions in conduct of inclining experiment. Confirmation of correctness of results of the test.

UNIT-7 BONJEAN AND HYDROSTATIC CURVES DETERMINATION OF VOLUME OF DISPLACEMENT,
7.1 LCB, VCB from Bonjean curves. VCB/KB, KM, LCF, LCB, CB, CP, CVP, CM, CWP, MCT, TPC and displacement curves

Reference Books:
1. Ship Stability for Masters and Mates by Derett, D. R
2. Principles of Naval Architecture by John P. Comstock