

4339- SHIP RESISTANCE AND PROPULSION									
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)				
Lectures	Practical	Credits			Theory		Practical Ex.	Total	
4	-	4	25	-	3 Hrs	100	-	125	
Pre-requisite		Source	Semester	Theory	Test	Total	TW	PR	Gr Total
4331		SHB		75	25	100	-	-	100

Rationale: The course contents is designed to enable students to understand the relevance of resistance, estimate ship resistance, select main propulsion plant based on resistance calculations, know various aspects of resistance and the dependence on hull-form, know different types of propellers and their application, familiarise with propeller data series.

COURSE CONTENTS		Hrs	M
1. RESISTANCE		25	2
Components of resistance: Frictional resistance, wave making resistance, Eddy resistance, viscous pressure drag, air resistance, wind resistance, wave breaking resistance, residuary resistance. Dimensional analysis. Froude's No., Reynold's No., Froude's law of similarity. Model testing -Geometric, kinematic and dynamic similarity. Procedure for model testing. Estimation of frictional resistance [ITTC 1957, Schoenherr, ATTC and Hughe's methods]. Model ship correlation, calculation of effective power, Shallow water effect. Estimation of resistance from Guldhammer's and Harvald's diagram.		15	2
2. SCREW PROPELLERS		10	1
Geometry of a propeller- Pitch, rate, skew, diameter. Interaction between hull and propeller-wake, slip, thrust deduction. Self-propulsion test. Propeller materials.		10	1
3. INTRODUCTION		5	
Special types of propellers and their applications. Ducted propellers, vertical arm propellers, controllable pitch propellers, Tandem and Contra rotating propellers, super cavitating propellers.		5	
4. ESTIMATION OF BHP OF MAIN ENGINE		6	
5. STERN GEAR		3	
Stern tube, sealing arrangements, fitting types and sterntubes, A-brackets.		3	
6. GEARS			
Reduction and reversing gears.			
Total		64	1

REFERENCE BOOKS

1. Principles of Naval Architecture by Edward V. Lewis.
2. Resistance and Propulsion of Ships by Sv A. A. Harvald.
3. Naval Architecture-Examples and Theory by B. Baxter.

