

4336 - MARINE ENGINEERING - I										
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)					
Lectures	Practical	Credits			Theory		Practical Ex.		Total	
3	2	5	25	25	3 Hrs	100	-	-	150	
Pre-requisite		Source	Semester		Theory	Test	Total	TW	PR	Gr Total
Nil		SHB			75	25	100	25	-	125

Rationale: - Technicians involved in shipbuilding, ship repairs and ship operations are required to have a thorough knowledge of pipeline systems with fittings, types of valves and their selection, types of Marine pumps, boilers types, diesel engines working cycles and components. Having studied this subject, student shall be able to choose material for pipe depending on ship systems for installation on board. Select valves for particular applications. Take decision for particular pump for ship service with their starting, stopping & maintenance strategies. Know various types of boilers in Marine usage, with mountings, accessories, maintenance, testing, & operation. Know four-stroke, two stroke cycles engines & their application on the ships.

COURSE CONTENTS		Hrs	Mt
1. PIPES		9	12
Ship pipelines, their material, fittings, methods of joining pipes, expansion joints, jointing, gland packing, strainers, steam traps, care of piping.			
2. VALVES		9	20
Types of valves used-on-board the ship- Cocks, globe valve, gate valve, relief valve, quick closing valve, reducing valve, valve chests, storm valve, throttle valve, butterfly valve and ball valve. Provision of valves before and after pumps-SD and SDNR valves.			
3. FLUID PUMPS		12	25
Types of pumps- Characteristics and Marine applications of reciprocating, centrifugal, rotary pumps used on ships. Definition and terminology, impeller characteristics, care and maintenance of pumps, testing of pumps, starting and stopping of pumps.			
4. MARINE BOILERS		12	25
Classification of boilers in Marine applications, fire tube and water tube boilers, mountings and accessories, principles of combustion, air supply, fuel supply, fuel burning, boiler feed water treatment, boiler operation, care & maintenance.			

5. COMPRESSORS

6 15

Types - Reciprocating- simple and multistage, centrifugal and rotary. Constructional details and applications. Air receivers and mountings

Total	48	100
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PRACTICAL

1. To study pipeline fitting i.e. Elbows, Tees, Unions, Sockets, Reducers, Bulkhead/Deck piece, Flange joint.
2. To identify different jointing materials and gland packing.
3. To dismantle and assemble various types of valves i.e. globe valve, gate valve, non return valve, butterfly valve, quick closing valve
4. To dismantle assemble & study principle of working of reciprocating, centrifugal, rotary & semi-rotary pump
5. To study boiler mountings (visit to a ship/industry)
6. Study of performance of air compressor.

REFERENCE BOOKS

1. Introduction to Marine Engg. by D.A. Taylor Butterworths, 1983, The University press, Cambridge.
2. Marine Auxiliary Machinery by David D. Smith, Butterworths, London.
3. Marine steam boilers by H. James Milton & M. Roy Leach (Butterworths).
4. Marine Diesel Engines by C. C. Pounder Butterworths, London.
5. Marine Engineering by Harrington Snamec, New York.

