4342 - MARINE ENGINEERING – III

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
					Theory		Practical Ex.	Total
Lectures	Practical	Credits						
3	2	5	25	25	3 Hrs	100	-	150

Pre-requisite	Source
4340	SHB

Semester	Theory	Test	Total	TW	PR	Gr Total
4	75	25	100	25	-	125

Rationale-This is course in Marine Engineering for the students of Diploma in Shipbuilding engineering deals with various types of deck machinery drives and their positions and installations. Due importance has also been given to fire protection system, ventilation. Air-conditioning and refrigeration system. As regards to installation of electrical equipment, the knowledge of wiring, lighting fixtures, switchboards and panels is also imparted to the students.

Competencies To Be Developed. Having studied this subject, the student shall be able to- Identify different deck machinery installed on board with their drives i.e. electric, hydraulic, mechanical. To know different type of steering gear i.e. mechanical, hand hydraulic, hydraulic, Electro hydraulic. To mobilise portable & fixed fire fighting installations on board. Interpret electrical installation on board inland/ocean going vessel. Understand working principle of ventilation, refrigeration & air-conditioning.

COURSE CONTENTS	Hrs	Mks
1. DECK MACHINERY Types of drives, mechanical, hydraulic, electrical details of hull machinery, hull machinery positions and installation, working principle of anchor windlass, winches, cargo and mooring winches, cargo handling gear, capstans, constructional details, bow thrusters, stabilisers. Hydraulic equipment, hydraulic pumps, motors and actuators, valves and fittings, their construction and operation.	15	25
2. SHIP SYSTEMS Ship piping systems, i.e. bilge and ballast, fresh water hydrophore, steam piping, fuel oil and lub oil systems and compressed air piping, fire fighting system.	12	25
3. VENTILATION, REFRIGERATION AND AIRCONDITIONING Ventilation-Natural and forced. Principle of vapour compression refrigeration cycle, equipment involved i.e. compressor, condenser, expansion valve, evaporator, thermostatic expansion valve, brine refrigeration system. Air-conditioning, cargo hold conditioning, provision of foodstuffs.	10	25
4. TERMINOLOGY Basic concepts of Electrical Machinery. Alternators – Construction and regulation, main switch board and distribution system, emergency source of power, preferential tripping, parallel operation, protective devices, shore connection and inter lock. A.C./D.C. distribution boards, protective devices, parallel operations, alternators and generators.	7	20
5. ENVIRONMENTAL PROTECTION Statutory requirements with reference to MARPOL, machinery exhaust, sewage, garbage and chemicals.	4	5
Total	48	100

PRACTICALS

1. To visit inland vessel/ocean going vessel and prepare deck machinery layout with their positions, brief description about working, line sketches of systems incorporated.
2. To visit inland vessel/ocean going vessel and prepare machinery space layout with details of ship pipeline systems.
3. To prepare sketches of natural and forced draft vents.