

GUJARAT TECHNOLOGICAL UNIVERSITY

Marine Engineering B. E. SEMESTER: VI

Subject Name: **Marine Boiler**

Subject Code: **161804**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	0	0	3	70	30	50

Sr. No	Course Content	Total Hrs.
1.	General Considerations governing the design of Boilers: Types of marine boilers, comparison of smoke tube and water tube boilers; Destructive and Non destructive tests on plates, rivets, welded seams, classification societies' requirements for boilers construction.	10
2.	Smoke Tube Boilers: Various types in marine use, Principal dimensions and staying of flat surface of multi-tubular cylindrical Boilers. Vertical Auxiliary Boilers.	04
3.	Water Tube Boilers: General description with sketches of principal types of boilers in marine use, Superheater, Economizer, Air preheater & steam preheater; circulation and use of Unheated Down comers in highly rated boilers; superheat temperature control, Attemperators and Desuperheaters.	10
4.	Waster Heat Boilers: Waste heat recovery calculation, Lamont exhaust gas boiler. Scotch composite Boiler, Cochran exhaust gas and composite boiler, spanner marine exhaust gas and Composite boiler. Forced Water Circulation boiler, Double evaporation Boiler.	08
5.	Boiler Mountings : Safety Valves- Improved High Lift, Full lift and full Bore type: Gauge glass- Ordinary plate type and remote Indicator; Automatic feed regulator, three element High & Low water level alarms, Main Steam stop valves, Retractable type Soot blower etc.	08

6.	Operation, Care & Maintenance: Precommissioning procedures, Hydraulic, steam raising and operating procedures, Action in the event of storage of water. Blowing down of boiler, Laying up a boiler; General maintenance. External and internal tube cleaning. Tube renewals, etc. maintenance, inspection and survey of boilers.	06
7.	Refractory Purposes of refractory, types of refractory and reasons for	04
8.	Oil Burning: 1. Procedure of Liquid fuel burning in open furnace. 2. Various types of atomizer. 3. Furnace arrangement for oil burning. 4. Boiler Control System i.e. master control, fuel control, air control and viscosity control.	04

Reference Books:

1. Marine Boilers, Third Edition (Marine Engineering Series) by G T H FLANAGAN
2. Marine Auxiliary Machinery, Seventh Edition by H D MCGEORGE
3. The Maritime Engineering Reference Book: A Guide to Ship Design, Construction and Operation Anthony F. Molland