

# GUJARAT TECHNOLOGICAL UNIVERSITY

## MARINE ENGINEERING

### B. E. SEMESTER: VII

Subject Name: **Ship Safety, Environmental Protection & Safe Watch Keeping - I**  
 Subject Code: **171807**

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

Sr. No	Course Content	Total Hrs.
1.	<b>Introduction:</b>  Precautions against fire and explosions, fire prevention, detections and extinction in all parts of a ship, & personal Survival Techniques and life saving appliances in ship. Medical Care.	05
2.	<b>Ship fire prevention &amp; control:</b>  Fire hazard aboard ships: Fire triangle, Spontaneous Combustion. Limits of inflammability, Advantages of various fire extinguishing agents including vaporizing fluids and their suitability for ship's use. Control of Class A, B and C fires.	05
3.	<b>Fire protection built in the ships:</b>  SOLAS convention, requirements in respect of materials of construction and design of ships, fire detection and extinction systems, escape means, electrical installations, ventilation system and venting system for tankers. Statutory requirements for fire fighting systems and equipments on different vessels.	05
4.	<b>Detection and Safety Systems:</b>  Fire Safety precautions on cargo ships and tankers during working. Types of detectors, Selection of fire detectors and alarm systems and their operational limits. Commissioning and periodic testing of sensors and detection system. Description of various systems fitted on ships.	05
5.	<b>Fire Fighting Equipment :</b>  Fire pumps, hydrants and hoses, Couplings, nozzles and international shore connection, Construction, operation and merits of different types of portable, non-portable and fixed fire extinguishers for ships. Properties of Chemicals used. Bulk Carbon Di-Oxide and inertgas systems. Fireman's outfit, its use and care. Maintenance, testing and recharging of appliances. Preparation, Fire	06

	appliance Survey.	
6.	<b>Fire control:</b>  Action required and practical techniques adopted for extinguishing fires in accommodation, machinery spaces, boiler rooms, Cargo holds, galley etc. fire fighting in port and dry dock. Procedure for re-entry after putting off fire. Rescue operations from affected compartments. First aid, fire organization on ships. Fire signal and muster. fire drill. Leadership and duties.	<b>06</b>
7.	Introduction & Safety, Emergency situations, principles of survival, use of survival equipment, survival craft and rescue boat. Methods of helicopter rescue, launching arrangements, life boat engines and accessories, Evacuation, Signaling equipment and pyrotechnics etc.	<b>06</b>
8.	First Aid, radio Equipment, launching and handling of survival craft in rough weather, understanding practical applications of medical guides, process of radio medical advices. Knowledge of actions to be taken in case of accidents or illness those are likely to occur on board ships.	<b>05</b>
9.	Personal Safety & social Responsibility – Different aspects of personal relationships on board.	<b>02</b>

### **Text Books:**

1. Loss Control Auditing: A Guide for Conducting Fire, Safety, and Security Audits by E. Scott Dunlap Stirling Book House
2. Safety & Security at Sea: A Guide to Safer Voyages Details by D.S. Bist ,Stirling Book House

### **Reference book:**

1. Peril at Sea & Salvage: A Guide for Masters, 5/E, 1998 Details by International Chambers of Shipping ,Stirling Book House
2. Accident & Loss Prevention at Sea: International Conference & Workshops by L. A. Holder ,Stirling Book House
3. Annex VI Regulation for the Prevention of Air Pollution from Ships & NOx Technical Code 2008, (Revised Marpol) 2009/Ed by SBH ,Stirling Book House