



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3173508
Semester – VII
Subject Name: Safety Health Environment

Type of course: Environmental Science & Technology

Prerequisite: A good fundamental backup of basic knowledge of Environment, Health & Safety issues in Industries.

Rationale: The main objective of this subject is to make students aware about the interrelationship among various Environment, safety & health related hazard controlling and preventive methods and their right usage at right place in right quantity. It also makes them learn about various management tools and estimation techniques. It works as a ground for some advance EHS management systems and green & safe businesses.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
3	0	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	Management of Health & Safety Need for developing Environment, Health and Safety systems in work places, Key elements of a safety and Health Management System, Safety and Health Management System records, Role of various safety representatives, Health safety and environmental policy, Regulations and Codes of Practice, International initiatives, Overview of Gujarat factories rules & Factories Act 1948	06
2	Key Elements of a Health & Safety Management Systems: PDCA Cycle, Fundamentals of Industrial Safety, Philosophy of accidents, Classification of accidents, Accident prevention, Employees state insurance act 1948, Physical aspect of working environment, Personal protective equipment, Protection of respiratory system, Safe working practices, Housekeeping, Safe working environment, safety device and tools, Occurrence of electric shock, medical analysis of electric shock and its effect.	08
3	Fire & Control: Fire, Fire tetrahedron, Classification of Fire and Fire extinguishers, operating procedure of	06



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	Portable fire extinguishers. Fire protective clothing, technical description and specifications of protective clothing. Breathing apparatus, types of breathing apparatus, care and maintenance of breathing apparatus, Hydrant system	
4	Types of Hazards & it's Study: Physical, chemical, electrical, mechanical, biochemical, radiological, Ergonomics and work place, Safety in hazardous area, Hazard in industrial zones, devices for measuring radiation, First aid, Occupational Health & diseases: Route of entry in human body, types of diseases, Role of factory medical officer, Safety measures to avoid occupational diseases, Highlights of Epidemiology, Instrumentation for safe operating plant procedures (SOPs), Personal hygiene, Factors contributing to hazardous situation, Safety audit and ISO 45001 & OHSAS 18001, HAZOP, HAZAN analysis.	08
5	Risk assessment: Key stages of Risk assessment and control, Stages in plant life and unsafe condition in factories, maintenance & safety, Basics safety programming, Safety department, Rules and regulation of safety department, Responsibility of management for safety in plant, safe guarding the public, Responsibility of government, social organization and public authorities. Safety activities of the ILO (International Labor Organization)	08

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	20	10	10	05	05

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- Industrial safety management By: L.M. Deshmukh Publishers: Tata Megraw Hill, New Delhi Year: 2006 Edition: First 2.
- Industrial safety health and environment Management system By: R.K. Jain & Sunil S. Rao Publishers: Khanna Publishers Year: 2008 Edition: Second
- Fire Protection And Prevention By: Brendra Mohan San Publishers: UBS Publishers & Distributors Pvt Ltd. Edition: 1st Edition Year of Publication: 2008
- Risk assessment- A Practical Guide, 1993, Institution of Occupational Safety and Health, United Kingdom



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Course Outcomes: After learning this course, students will be able to:

Sr. No.	CO statement	Marks % weightage
CO-1	Describe the various aspects of Environment Health & Safety.	20
CO-2	Explain occupational health related problems.	15
CO-3	Operate fire protective apparatus	15
CO-4	Categories hazards and PPE	20
CO-5	Explain the various rules. Codes and Act of health and safety	15
CO-6	Access the risk assessment	15