

FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme:	Bachelor of Technology (Computer Engineering)
Semester:	V
Course Code:	202030522
Course Title:	Industrial Safety and Health Management
Course Group:	Open Elective - I

Course Objectives: This course would enable students to recognize and evaluate industrial safety and occupational health hazards in the workplace. Students will be able to analyse the effects of workplace exposures, accidents, illness, fatalities, risks and the methods to prevent accident using safety and health management.

Teaching & Examination Scheme:

Contact hours per week			Course	Exai	ssing)			
Locturo	Tutorial	Dractical	Credits	The	eory	J/V	/P*	Total
Lecture	Tutorial	Flactical		Internal	External	Internal	External	TULAT
3	0	0	3	50 / 18	50 / 17	NA	NA	100 / 35

* J: Jury; V: Viva; P: Practical

Detailed Syllabus:

Sr.	Contents	Hours				
1	Introduction to Safety Standards:					
	Importance of Safety, objectives of safety management, Role and Responsibility of					
	government, National Safety Council, Safety Standards, Safety Audit, Factory Act					
2	Safety Management System:	07				
	Policy regarding safety in organization, safety climate, safety organization structure, safety culture and performance management, roles and responsibilities of various persons for managing safety in industry, policy documentations, safety budget, investment in safety, Introduction, need and importance of safety training and education safety plan analysis of safety data					
3	Accident and Incident Investigation:	04				
	Definitions, Accident, Process of accident, Causes of accidents, Accident prevention and control techniques, Plant safety inspections, Job safety Analysis and investigation of accidents, First aid, financial costs-direct and indirect, social costs of accidents, Compilation procedure for financial costs, Cost data, quality and its limitations-Budgeting.					

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4	Hazard identification, Risk Assessment and Control:	14
	Check list procedure, Preliminary hazard analysis, What if analysis, Failure mode	
	effect	
	analysis, Hazard and operability (HAZOP) studies, Hazard analysis techniques:	
	Fault tree analysis, Event tree analysis, General outline of DOW index, Risk	
	estimation and	
	Management, Major hazard control, On-site and Off-site emergency preparedness.	
	Identification of hazard, Categorization methods for elimination of hazard,	
S	Mechanical	
	hazards; machine guarding, safety with hand tools/ portable power tools, Pressure vessel	
	hazards and their control, Safety in material handling: hazards and safe Practices,	
	safety	
	with storage of materials, Electrical hazards: classification, safe work practices,	
	Chemical hazards: laboratory safety, bulk handling of chemicals, Fire and explosion	
	hazards, Fire detection, Prevention ,control, and extinguishments, Industrial layout,	
	Industrial waste management. Safety during construction: accidents of different	
	stages of construction, accidents during receiving, unloading, shifting and storage,	
1	safety guidelines for storage, safety facilities at sites, coordination interface	
	between civil and erection works, hazardous material and atmosphere.	
5	Industrial Hygiene:	04
	Definition of Industrial Hygiene, Phases of industrial hygiene Industrial Hygiene:	
	Control Methods, Substitution, Changing the process, isolation, wet method, local	
	exhaust ventilation, personal hygiene, housekeeping and maintenance, waste	
6	disposal, special control measures.	00
0	Occupational Health Management:	09
	Concept of nearth and occupational nearth, Spectrum of nearth, Occupational and	
	Characteristics of occupational diseases. Eccentials of occupational health corrigo	
	characteristics of occupational diseases, Essentials of occupational health service,	
	Occupational health hazarda. Advarge health affects of poice vibration, cold heat	
	stross improper illumination thermal radiation ionizing and non lionizing	
	radiations. Permissible threshold exposure limits - short term and long term offects	
	of exposures Preventive and control measures	
	Total	42
1		

Reference Books:

1	Anupama Prashar & Bansal, "Industrial Safety and Environment", S.K. Kataria & sons, New
1	Delhi, 2005.
2	Industrial Accident Prevention, H.W. Heinrich, Dan Petersen, and Nestor Roos, McGraw-Hill
	Book Company, New York / New Delhi.
3	Techniques of Safety Management (ISBN: 978-18-8-558139-6), Dan Petersen, McGraw-Hill
	Book Co. Ltd., New York, N.Y. USA.
4	Industrial Safety and Environment, A. K. Gupta, Laxmi Publications, New Delhi.
5	Industrial Safety, Health and Environment Management Systems, R. K. Jain and Sunil S. Rao,
	Khanna publishers, New Delhi (2006).

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6	Safety- Health and working conditions: Training Manual, National Safety Council, Mumbai,
	2000.
7	"Major safety control: A practical Manual" National safety council, India, 1993.
8	H Lingard and S M Rowlinson, Occupational Health and Safety in Construction Project
	Management, Routledge, Oxford, 2004.
9	A Griffith and T Howarth, Construction Health and Safety Management, Routledge, London,
	2014.
10	Guiding Principles for chemical accident Prevention, preparedness and response: Manual
F	prepared by organization for economic co-operation and development, 1992.

Supplementary learning Material:

- 1 https://youtu.be/USGuag1Jids
- 2 https://youtu.be/VhuZ6M7a8N8
- 3 https://youtu.be/n7oUOUCIblg
- 4 https://nptel.ac.in/courses/110/105/110105094/

Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %				larks ii	n %	R : Remembering; U : Understanding; A : Applying;
R	U	Α	Ν	E	C	N: Analyzing; E: Evaluating; C: Creating
10%	40%	50%	-		-	

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.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage		
CO-1	Understand safety standards and management systems.	15		
CO-2	Apply the knowledge of accident theories to prevent accidents. 15			
CO-3	Understand the methods of hazard and risk identification and	25		
	preventive Measures.			
CO-4	Evaluate industrial safety programs and hygiene and Select appropriate			
	control methodologies based on the hierarchy of controls.			
CO-5	Analyze the occupational health management.20			

Curriculum Revision:

Version:	2.0				
Drafted on (Month-Year):	June 2022				
Last Reviewed on (Month-Year):					
Next Review on (Month-Year):	June 2025				

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