SEMESTER S7

INDUSTRIAL SAFETY AND HEALTH

Course Code	PEIET754	CIE Marks	40
Teaching Hours/Week (L:T:P: R)	3:0:0:0	ESE Marks	60
Credits	3	Exam Hours	2 Hrs. 30 Min.
Prerequisites (if any)	None	Course Type	Theory

Course Objectives:

1. To provide a detailed understanding of occupational safety and its impacts in worker's health.
2. To provide an adequate background for applying the concept of safety in working environments.

SYLLABUS

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Module No.	Syllabus Description	Contact Hours
1	**Introduction to industrial safety:** Definitions, safety systems, safety information system, basic concepts, definition of accidents, analysis of causes of accident. **Fire protection systems:** Automated fire fighting system, chemistry of fire, water sprinkler, fire hydrant, alarm and detection system. Suppression systems - CO2 system, foam system, DCP system, halon system, portable extinguisher.	9
2	**Managing safety:** Safety inspection, procedure, periodicity, checklist, report forms. Planning for safety and productivity, safety sampling, safety audit, safety survey, JSA, accident prevention. Work permit and lock out system, accident analysis, safety education, communication and safety performance analysis. Personal protective equipment testing, usage.	9
3	**Safety in material handling:** Selection of material handling equipment, equipment used, ropes, chains, slings, hooks, clamps,	9

	procedure for testing and checking as per standard. Design conservation, conveyor systems, belt, roller chain and elevator and lifts, industrial hoists, mobile crane, forklift, operation maintenance and checking procedure.	
4	**Hazard analysis:** Electrical, physical and chemical hazards, detailed hazard analysis, cost effectiveness in hazard eliminations, fault tree analysis and HAZOP, safety legislation- provisions in factory act for safety, explosive act, workmen compensation act, compensation calculation, boiler act, pollution control act.	**9**

Course Assessment Method
(CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Microproject	Internal Examination-1 (Written)	Internal Examination- 2 (Written)	Total
5	**15**	**10**	**10**	**40**

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End Semester Examination Marks (ESE)

In Part A, all questions need to be answered and in Part B, each student can choose any one full question out of two questions

Part A	Part B	Total
● 2 Questions from each module. ● Total of 8 Questions, each carrying 3 marks **(8x3 =24marks)**	● Each question carries 9 marks. ● Two questions will be given from each module, out of which 1 question should be answered. ● Each question can have a maximum of 3 sub divisions. **(4x9 = 36 marks)**	**60**

Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Explain the basic concepts of industrial safety and to identify the use of fire protection systems in organisations.	**K3**
CO2	Make use of safety systems and procedures in organisations.	**K3**
CO3	Identify the safety of material handling systems.	**K3**
CO4	Apply hazard analysis and to make use of provisions of safety legislations in organisations.	**K3**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO-PO Mapping Table (Mapping of Course Outcomes to Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	3	-	-	2	-	-	-	-	-	2
CO2	2	-	3	-	-	2	-	-	-	-	-	2
CO3	2	-	3	-	-	2	-	-	-	-	-	2
CO4	2	-	3	-	-	2	-	-	-	-	-	2

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Note: *1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), -: No Correlation*

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Industrial Safety Management: 21st Century Perspectives of Asia	J Maiti, Pradip Kumar Ray	Springer	Online Edition, 2017
2	Industrial Safety Management: Hazard Identification and Risk Control	L. M. Deshmukh	McGraw-Hill Education	1st Edition, 2017
3	Safety at Work	John Ridley, John Channing	Routledge	7th Edition, 2007
4	Industrial Safety, Health and Environment Management Systems	R.K. Jain, Prof. Sunil S. Rao	Khanna Publishers	4th edition, 2000

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Accident Prevention Manual for Business & Industry: Engineering & Technology	National Safety Council	National safety council, Chicago.	14th Edition, 2015
2	Fault Tree Handbook	W. E. Vesely, F. F. Goldberg	Create space Independent Pub	1st Edition, 2014
3	Fire Prevention Handbook	Derek James	Buttes Worths and Co.	1st Edition, 1986
4	Industrial Accident Prevention: A safety management approach	Herbert William Heinrich, Dan Petersen, Nestor R. Roos	McGraw Hill Inc.	5th Edition, 1980

Video Links (NPTEL, SWAYAM…)	
Link ID	https://archive.nptel.ac.in/courses/110/105/110105094/

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