Industrial Safety

Course Code	23ME2605	**Year**	III	**Semester**	II
Course Category	OE- II	**Branch**	ME	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	-
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		BL
CO1	Understand the basic concepts of industrial safety and management	L2
CO2	Demonstrate the accident preventions and protective equipment	L2
CO3	Elucidate the concepts related to safety acts industries	L3
CO4	Apply fire safety, fire prevention and protection principles in buildings systems	L3

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)
Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation
* - Average value indicates course correlation strength with mapped PO

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	1				3		3	3		3	3		
CO2	1				3		3	3		3	3		
CO3	1				3		3	3		3	3		
CO4	1				3		3	3		3	3		
Average	1				3		3	3		3	3		

Syllabus		
Unit No.	**Contents**	**Mapped CO**
1	**Introduction To The Development of Industrial Safety And Management**: History and development of Industrial safety: Implementation of factories act, Safety and productivity, Safety organizations. Safety committees and structure, Role of management and role of Govt.in industrial safety.	CO1
2	**Accident Preventions and Protective Equipment**: Personal protective equipment, Survey the plant for locations, Part of body to be protected, Education and training in safety, Prevention causes and cost of accident, Housekeeping, First aid, Accident reporting, Investigations. Industrial psychology in accident prevention, Safety trials, Safety related to operations.	CO1,CO2
3	**Safety Acts**: Features of Factory Act, Introduction of Explosive Act, Boiler Act, ESI Act, Workman's compensation Act, Industrial hygiene, Occupational safety, Diseases prevention, Ergonomics, Occupational diseases, stress, fatigue, health, safety and the physical environment,	CO1, CO3

	Engineering methods of controlling chemical hazards, safety and the physical environment, Control of industrial noise and protection against it, Code and regulations for worker safety and health, codes for safety of systems.	
4	**Fire Prevention and Protection**: Sources of ignition – fire triangle – principles of fire extinguishing – active and passive fire protection systems – various classes of fires – A, B, C, D, E-Fire extinguishing agents- Water, Foam, Dry chemical powder, Carbon-dioxide Halon alternatives Halocarbon compounds-Inert gases, dry powders – types of fire extinguishers – fire stoppers –hydrant pipes – hoses – monitors – fire watchers – layout of stand pipes – fire station-fire alarms and sirens – maintenance of fire trucks – foam generators – escape from fire rescue operations – fire drills –first aid for burns.	CO1,CO4
5	**Building Fire Safety**: Objectives of fire safe building design, Fire load, fire resistant material and fire testing – structural fire protection – structural integrity – concept of egress design -exit– width calculations –fire certificates – fire safety requirements for high rise buildings.	CO1,CO4

Learning Recourses

Text Books

1. Srivastava, S.K.- Industrial Maintenance Management S.Chandand Co.,2002
2. Willie Hammer, Occupational Safety Management and Engineering, 5th Ed., Prentice Hall, 2000
3. Purandare D.D & Abhay D.Purandare, "Handbook on Industrial Fire Safety" P&A publications, New Delhi, 2006.
4. McElroy, FrankE.,"Accident Prevention Manual for Industrial Operations", NSC, Chicago, 1988.
5. Green, A.E.,"High Risk Safety Technology", John Wiley and Sons, 1982

References

1. Bhattacharya, S.N.-Installation, Servicing and Maintenance S.Chandand Co.,1995
2. Jain VK "Fire Safety in Building" New Age International 1996.
3. Dr. A. K.Guptha Reliability, Maintenance and Safety Engineering 1st Ed., Laxmi Publications, 2015
4. Alakesh Manna , A Text book of Reliability and Maintenance Engineering, Kindle Edition, I K International Publishing House, 2011

E-Resources

1. Industrial Safety Engineering – NPTEL (IIT Kharagpur) https://onlinecourses.nptel.ac.in/noc25_mg142/preview
2. Industrial Safety Engineering – NPTEL Online Courses Archive https://onlinecourses-archive.nptel.ac.in/noc18_mg42
3. Industrial Safety Engineering Videos and Materials – NPTELPrep https://www.nptelprep.in/courses/110105094/videos
4. Industrial Safety Engineering Lectures – NPTEL (Prof. J. Maiti) – YouTube https://youtu.be/jFDWlKayrTc