INDUSTRIAL SAFETY

(Open Elective-II)

Course Code	23ME2605	Year	III	Semester	II
Course Category	Open Elective - II	Offering Branch	ME	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Nil
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

	Statement	BTL
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

Contribution of Course Outcomes towards achievement of Program Outcomes &Strength of correlations (H:High (3), M:Medium (2), L:Low (1))

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	1				3		3	3		3		2	3
CO2	1				3		3	3		3		2	3
CO3	1				3		3	3		3		2	3
CO4	1				3		3	3		3		2	3

SYLLABUS		
UNIT	Content	Mapped CO
I	**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
II	**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
III	**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, 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.	CO1 CO3

IV	**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**
V	**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 Recourse(s)

Text Book(s)

1. Industrial Maintenance Management – S. K. Srivastava, S. Chand & Company.
2. Occupational Safety Management and Engineering – Willie Hammer, Prentice Hall.
3. Handbook on Industrial Fire Safety – D. D. Purandare and Abhay D. Purandare, P&A Publications, New Delhi, 2006.
4. Accident Prevention Manual for Industrial Operations – Frank E. McElroy, National Safety Council (NSC), Chicago, 1988.
5. High Risk Safety Technology – A. E. Green, John Wiley & Sons, 1984.

Reference books

1. Installation, Servicing and Maintenance – S. N. Bhattacharya, S. Chand & Company.
2. Fire Safety in Buildings – V. K. Jain, New Age International, 1996.
3. Reliability, Maintenance and Safety Engineering – Dr. A. K. Gupta.
4. A Textbook of Reliability and Maintenance Engineering – Alakesh Manna.

E-Resources for Industrial Safety:

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