

INDUSTRIAL SAFETY
B.E, VI Semester, Mechanical Engineering
[As per Choice Based Credit System (CBCS) scheme]

Course Code	17ME662	CIE Marks	40
Number of Lecture Hours/Week	03	SEE Marks	60
Total Number of Lecture Hours	40(8 Hours per Module)	Exam Hours	03

Credits – 03

Course Objectives:

Students will be able to recognize and evaluate occupational safety and health hazards in the workplace, and to determine appropriate hazard controls following the hierarchy of controls.

Students will furthermore be able to analyze the effects of workplace exposures, injuries and illnesses, fatalities and the methods to prevent incidents using the hierarchy of controls, effective safety and health management systems and task-oriented training.

Module – 1 INTRODUCTION TO SAFETY

Terms used: accident, safety, hazard, safe, safety devices, safety guard, security, precaution, caution, appliance, slip, trip, fall.

Ladders and scaffolding. Unsafe acts, reason for accidents, MSDS (material safety data sheet), OSHA, WHO.

Lockout and tag out procedures. Safe material handling and storage.

Module – 2 FIRE SAFETY

Introduction, Class A, B, C, D and E fire. Fire triangle, Fire extinguishers, Fire hazard and analysis, prevention of fire. Fire protection and loss prevention, steps after occurrence of fire. Portable fire extinguishers. Fire detection, fire alarm and fire fighting systems.

Safety sign boards, instruction on portable fire extinguishers.

Case studies: demonstration of fire extinguishers, visit to local fire fighting stations. Visit to fire accident sites to analyze the cause of fire and its prevention for future.

Module – 3 MECHANICAL SAFETY

PPE, safety guards, Safety while working with machine tools like lathe, drill press, power and band saws, grinding machines. Safety during welding, forging and pressing.

Safety while handling Material, compressed gas cylinders, corrosive substance, waste drum and containers.

Module – 4 ELECTRICAL SAFETY

Introduction to electrical safety, Electric hazards, effect of electric current on human body, causes of electrical accidents, prevention of electric accidents, PPE used.

Electric shock. Primary and secondary electric shocks, AC and DC current shocks.

Safety precautions against shocks. Safety precautions in small and residential building installations. Safety procedures in electric plant.

Module - 5 CHEMICAL SAFETY AND OTHER SAFETY CHECKS

Introduction to Chemical safety, Labeling of chemicals, acid hoods, Handling of acids, eye washers and showers. Safety thinking, accident investigation, safety policy of the company, safety, loss prevention and control, check list for LPG installations, safety precautions using CNG, fire prevention and safety audit, confined space entry, risk assessment.

Course outcomes:

- Understand the basic safety terms.
- Identify the hazards around the work environment and industries.
- Use the safe measures while performing work in and around the work area of the available laboratories.
- Able to recognize the sign boards and its application.
- Able to demonstrate the portable extinguishers used for different class of fires.
- Able to write the case studies by sharing experience of the employees working in housekeeping, laboratories like workshops, electrical labs, machine shops, electronics and computer laboratories.
- Able to understand and report the case studies from various references (text books, news report, journals, visiting industries like power stations, manufacturing and maintenance).

TEXT BOOKS:

1. Industrial Safety and Management by L M Deshmukh by McGraw Hill Education (India) private Limited, ISBN-13: 978-0-07-061768-1, ISBN-10: 0-07-061768-6
2. Electrical Safety, fire safety and safety management by S.Rao, R K Jain and Saluja. Khanna Publishers, ISBN: 978-81-7409-306-6

REFERENCE BOOKS

- 1- Chemical process Industrial safety by K S N Raju by McGraw Hill Education (India) private Limited, ISBN-13: 978-93-329-0278-7, ISBN-10: 93-329-0278-X
- 2- Industrial Safety and Management by L M Deshmukh. McGraw Hill Education (India) private Limited, ISBN-13: 978-0-07-061768-1, ISBN-10: 0-07-061768-6
- 3- Environmental engineering by Gerard Kiely by McGraw Hill Education (India) private Limited, ISBN-13: 978-0-07-063429-9


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