

COURSE SYLLABUS

Course Number: TBD

Course Title: Introduction to Industrial Safety

Course Pre-requisites: None

Course Credit Hours: 3 Credit hours

Structure of Course: 45/0/0/0

Textbook: Tooling U-SME Online resource

Course Description: This course is designed to provide students with a general understanding of common manufacturing safety standards and concerns. Students will be introduced to OSHA, OSHA's role in prevention and elimination of work-related injuries, employer and employee rights and responsibilities, inspection process, reporting and recordkeeping, personal protective equipment, chemical, fire and electrical hazards, confined space and others. This course aims to present an overview of basic workplace hazards and how you can protect yourself from them.

Competencies: Upon completion of this course, the student will be able to:

- A. Identify manufacturing and its impact on the economy.
- B. Interpret the purpose of the OSH Act, the functions of OSHA, and common OSHA standards that apply to manufacturing.
- C. Identify the purpose of safety policies and procedures and analyze safety program management principles.
- D. Explain guidelines for equipment monitoring and safety.
- E. Demonstrate the ability to recognize, evaluate, and control unsafe conditions through practices and corrective actions.
- F. Provide a clear understanding of safety in the workplace.
- G. Advise proper use, handling, storage and disposal of materials safely.
- H. Evaluate appropriate safety precautions and use of equipment.
- I. Identify the need for emergency plans and performance of emergency safety drills.

Course Outline:

1. Manufacturing Opportunities

- a. Describe the growth of manufacturing and career opportunities
- b. Explain support industries within manufacturing
- c. Describe the importance of frontline production workers.
- d. Explain the need and advantages of cross-training employees
- e. Identify challenges and benefits of a diverse workforce.

2. Manufacturing and Society

- a. Describe the importance of technical education and training related to careers in manufacturing.
- b. Explain the required expertise and ability needed for working in manufacturing.

- c. Explain the impact manufacturing has on people and the local, national, and global economy.
 - d. Explain the significant advantages of quality inspection during production
 - e. Explain the influence customers have on the manufacturing process.
 - f. Explain how regulated standards affect employer and employee responsibilities.
3. Safety Regulations
 - a. Define the purpose of OSHA
 - b. Identify the responsibilities organizations and individuals have to safety.
 - c. Explain how safety regulations are communicated.
 - d. Describe how to interpret and locate safety regulations.
4. Onsite Inspections
 - a. Understand the purpose of an onsite safety inspection
 - b. Explain the inspection process
 - c. Describe how to report unsafe working conditions
 - d. Explain standardized recordkeeping and reporting
5. Workplace Safety Assessment
 - a. Describe the importance of a workplace safety assessment
 - b. Explain how a workplace safety assessment is performed.
6. Emergency Readiness
 - a. Explain the importance of an emergency readiness plan
 - b. Identify different types of emergencies
 - c. Explain components of an effective emergency readiness plan
 - d. Explain how to report an emergency
7. Organizational Behavior
 - a. Identify types of communication
 - b. Explain common communication barriers
 - c. Explain the effects of poor communication within a company
 - d. Describe appropriate organizational behavior
 - e. Explain how to resolve inappropriate organizational behavior.
8. Eye, Face, Hearing, Hand, Foot, Head, and Body Safety Protection
 - a. Explain the importance of personal protective equipment (PPE)
 - b. Identify safety standards for personal protective equipment
 - c. Identify PPE for eye, face, hearing, hand, foot, head, and body protection
 - d. Explain potential hazards for these areas of exposure
 - e. Distinguish proper equipment and use for areas of protection
9. Respiratory Safety Protection
 - a. Identify safety standards for respiratory protection
 - b. Explain potential respiratory hazards
 - c. Identify personal protective equipment for respiratory safety
 - d. Explain how to properly fit, use and maintain a respirator.
10. Fire Prevention Plan

- a. Explain the importance of a fire prevention plan
- b. Define fire safety and prevention regulations
- c. Describe potential fire hazards
- d. Explain how to correctly select and operate a fire extinguisher.

11. Electrical Safety Work

- a. Explain the importance of electrical safety
- b. Identify common electrical hazards in the workplace
- c. Define regulation standards for electrical safety
- d. Describe the purpose of a lockout/tagout device
- e. Explain how to perform a lockout/tagout procedure

12. Preventive and Procedure Measures

1. Describe the purpose of first aid
2. Explain best practices and liabilities related to first aid treatment.
3. Describe preventative measures to blood borne pathogens
4. Explain types of blood borne pathogen exposure
5. Explain how to respond and report a work-related injury or illness

13. Safe Work Area

- a. Describe the basic components of a safe work area
- b. Identify proper safety regulations for walking and working surfaces
- c. Explain different types of safe work permits and their purpose
- d. Define confined space
- e. Identify dangers associated with confined spaces.
- f. Explain the rules for entering a confined space

14. Ergonomics in the Workplace

- a. Describe ergonomics and how it impacts the work environment.
- b. Explain the importance of good ergonomic practices
- c. Describe proper instruction for ergonomic safety
- d. Define lifting requirements for ergonomic safety

15. Safety Procedures for Platforms and Manlifts

- a. Define proper safety requirements for platforms and manlifts
- b. Explain common hazards associated with these working areas.
- c. Describe the difference between a ladder and scaffold
- d. Describe the difference between a boom and scissor lift

16. Management of Hazardous Materials

- a. Identify different types of environmental safety hazards
- b. Discuss hazardous materials used in manufacturing.
- c. Explain types of exposure to hazardous materials
- d. Explain safety regulations for hazardous materials
- e. Describe Hazard Communication Standard (HCS) and its importance
- f. Describe Hazardous Material Identification System (HMIS) and its importance

17. Requirements for Labeling

- a. Explain the purpose of Globally Harmonized System (GHS)

- b. Identify OSHA's requirements for labeling procedures
- c. Define various types of hazardous material identification systems

18. Hazard Communication Standards

- a. Define the purpose of a Safety Data Sheet (SDS)
- b. Describe the required information contained on an SDS.
- c. Explain how to interpret the SDS information.
- d. Define the requirements for distribution and access to SDS

19. Hazardous Material Handling and Storage

- a. Define regulations for handling and storing hazardous material
- b. Describe the responsibilities of the DOT for hazardous material
- c. Define the requirements for shipping hazardous materials

20. Management of Hazardous Waste

- a. Explain the importance of hazardous waste management
- b. Describe the environmental safety and health hazardous exposure can create.
- c. Define waste management responsibilities of the Environmental Protection Agency.
- d. Define waste management responsibilities of the International Standards Organization.
- e. Explain regulated procedures and action required for contaminated areas.

21. Lubricants

- a. Describe the purpose of metalworking fluids
- b. Define the advantages of using lubricants in metalworking process
- c. Identify potential hazards due to exposure
- d. Explain proper disposal and recycling practices for lubricants

22. Machine Safety Hazards

- a. Describe safety standards for machine operation
- b. Identify appropriate clothing for machine operation
- c. Describe the use of machine guards on machine tool equipment.
- d. Identify different types of machine guards and safeguarding devices

23. Mechanical System Procedures

1. Define the purpose of lockout/tagout devices
2. Describe regulations related to lockout/tagout procedures.
3. Identify six forms of energy that can be hazardous during maintenance.
4. Explain how to accurately perform a lockout/tagout procedure.

24. Handling Tools Safely

- a. Describe safety regulations for hand and power tools
- b. Explain proper tool maintenance procedures
- c. Describe the importance of cutting safety
- d. Identify types of metal cutting hazards
- e. Explain guidelines for cutting metal safety

25. Fixed and Portable Ladder Safety

- a. Describe safety requirements for using a ladder
- b. Explain the importance of proper maintenance and inspection of ladders

- c. Identify different types of ladders and their load ratings

26. Lifting and Movement Practices

- a. Describe different techniques for lifting and moving materials
- b. Identify types of equipment used in these operations.
- c. Describe how to move a load safely and effectively
- d. Explain the use of a block and tackle system.

27. Forklift Operation and Safety

- a. Define powered industrial trucks
- b. Explain certification requirements for power industrial truck operators
- c. Describe safety regulations for power industrial truck operators
- d. Explain how to perform a prestart inspection
- e. Describe forklift stability and design
- f. Identify proper safety procedures for lifting and transporting loads

28. Machine Rigging

- a. Define the purpose of rigging
- b. Describe safety procedures for rigging operations
- c. Describe inspection procedures for rigging
- d. Explain how to calculate the weight of a load to its center of gravity.

29. Hoists and Cranes

- a. Describe the operation of a hoist and a crane and their differences
- b. Describe safety regulations for operating a hoist and crane
- c. Identify types of hoist and cranes used for lifting.