

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 1

Lesson Plan for:

Manufacturing Opportunities

Session Summary:

This session introduces students to manufacturing as a career, including related rewards, challenges, and responsibilities.

Objectives:

Describe the growth of manufacturing and career opportunities.

Explain support industries within manufacturing.

Describe the importance of frontline production workers.

Explain the need and advantages of cross-training employees.

Identify challenges and benefits of a diverse workforce.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Supervisor Essentials - Managing a Diverse Workplace 210 Lessons 1-16.

Materials

[ToolingU](#)

Learning

Discuss manufacturing related historical issues, sub-industries, and potential opportunities.

Hands-on learning

Invite local manufacturing businesses to discuss their operations.

Open

Discuss responsibilities, challenges, opportunities and rewards for diversity in the workplace.

Web-Enhanced Lecture

Read/Review Managing a Diverse Workplace 210

[ToolingU](#)

Evaluation

Instructor observations, assign homework or quiz.

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Session 2 Lesson Plan for: Manufacturing and Society

Session Summary: This session discusses the current and historical impact of manufacturing on the economy and also discusses industry certifications, regulations and standards.

Objectives:
Describe the importance of technical education and training related to careers in manufacturing.
Explain the required expertise and ability needed for working in manufacturing.
Explain the impact manufacturing has on people and the local, national, and global economy.
Explain the significant advantages of quality inspection during production.
Explain the influence customers have on the manufacturing process.
Explain how regulated standards affect employer and employee responsibilities.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Quality - Quality Overview 100 Lessons 1-16. Safety - Intro to OSHA 100 Lessons 1-18.

Materials

[ToolingU](#)

Discuss common industry credentials and skills and ways to attain them.

Hands-on learning

Invite local manufacturing businesses to discuss what credentials and skills they are looking for within industry.

Open

Learning Discuss the impacts of manufacturing and customer expectations.

Web-Enhanced Lecture

Read/Review Quality Overview 100 Lessons 1-8.

[ToolingU](#)

Discuss regulations and standards affecting manufacturers and its workers.

Web-Enhanced Lecture

Read/Review Intro to OSHA 100 Lessons 1-3.

[ToolingU](#)

Evaluation Instructor observations, assign homework or quiz.

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Session 3 Lesson Plan for: Safety Regulations

Session Summary: This session discusses the importance of safety in the work environment, the development of the Occupational Safety and Health Administration (OSHA), and responsibilities related to safety.

Objectives:
Define the purpose of OSHA
Identify the responsibilities organizations and individuals have to safety.
Explain how safety regulations are communicated.
Describe how to interpret and locate safety regulations.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Intro to OSHA 100 Lessons 1-18 (assigned). Fire Safety and Prevention 110 Lessons 1-17. SDS and Hazard Communication 160 Lessons 1-22.

Materials

[ToolingU](#)

Define workplace safety and health and the role of OSHA.

Web-Enhanced Lecture

Review OSHA.gov web page and common navigation features. Search this website and locate OSH Act of 1970. Sort through and discuss regulations.

www.OSHA.gov

Learning

Describe employee/employer responsibilities and how to locate regulations and policies.

Web-Enhanced Lecture

Read/review Intro to OSHA 100 Lessons 4-18.

[ToolingU](#)

Describe fire safety and prevention measures and emergency action plans.

Web-Enhanced Lecture

Read/review Fire Safety and Prevention 110 Lessons 1-8 and 14-17.

[ToolingU](#)

Describe how hazardous chemical information reaches the employee.

Web-Enhanced Lecture

Read/review SDS and Hazard Communication 160

[ToolingU](#)

Evaluation Instructor observations, assign homework or quiz.

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Session 4 Lesson Plan for: Onsite Inspections

Session Summary:

This session discusses the purpose and importance of hazard identification through safety audits and inspections.

Objectives:

Understand the purpose of an onsite safety inspection.
Explain the inspection process.
Describe how to report unsafe working conditions.
Explain standardized recordkeeping and reporting.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Intro to OSHA 100 Lessons 1-18 (assigned).

Materials

[ToolingU](#)

Learning

Discuss OSHA's stance on inspection priorities.

Web-Enhanced Lecture

Review OSHA Inspections Priorities Fact Sheet and inspection data by SIC, NAICS, or location

www.OSHA.gov

Discuss common practices related to hazard identification, mitigation, and control.

Web-Enhanced Lecture

Read/Review Intro to OSHA 100 Lessons 8-9 and 12-13.

[ToolingU](#)

Evaluation

Instructor assigned homework or quiz.

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Session 5 Lesson Plan for: Workplace Safety Assessment

Session Summary: This session describes the process of completing a workplace safety assessment.

Objectives: Describe the importance of a workplace safety assessment
Explain how a workplace safety assessment is performed.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Personal Protective Equipment 120 Lesson 1-19.

Materials

[ToolingU](#)

Discuss safety audits and job safety analysis.

Web-Enhanced Lecture

Review OSHA Job Hazard Analysis Guide

www.OSHA.gov

Learning

Discuss personal protective equipment requirements and address potential hazards.

Web-Enhanced Lecture

Read/Review Personal Protective Equipment 120 Lesson 4.

[ToolingU](#)

Perform a workplace safety assessment.

Hands-on learning

Perform a workplace safety assessment and review the findings. In-house audit

Evaluation Instructor observations, assign homework or quiz.

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Session 6 Lesson Plan for: Emergency Readiness

Session Summary: This session will cover essential information needed to develop an emergency readiness plan and regulations related to reporting an emergency.

Objectives:
Explain the importance of an emergency readiness plan.
Identify different types of emergencies.
Explain components of an effective emergency readiness plan.
Explain how to report an emergency.

<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
ToolingU Reading Assignment	Online learning	Safety - Fire Safety and Prevention 110 Lessons 1-17 (assigned).	ToolingU
Review regulations related to emergency and fire planning.	Web-Enhanced Lecture	Review OSHA regulations pertaining to emergency planning	www.OSHA.gov
Learning Discuss emergency situations commonly found in industry.	Web-Enhanced Lecture	Read/review Fire Safety and Prevention 110 Lessons 1-4, 13, and 16.	ToolingU
Discuss elements of emergency action plans.	Web-Enhanced Lecture	Review OSHA eTool on evacuation planning.	www.OSHA.gov
Complete a mock response.	Hands-on learning	Tabletop exercise	http://wiser.nlm.nih.gov/
Evaluation	Instructor observations, assign homework or quiz.		

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Session 7	Lesson Plan for:	Organizational Behavior		
	Session Summary:	This session will discuss methods on how to address observed behaviors and improve team communication.		
	Objectives:	Identify types of communication. Explain common communication barriers. Explain the effects of poor communication within a company. Describe appropriate organizational behavior. Explain how to resolve inappropriate organizational behavior.		
	Description	Delivery Method	Activity	Materials
	ToolingU Reading Assignment	Online learning	Supervisory Essentials - Essentials of Communication 120 Lessons 1-14. Managing Performance: Corrective Actions 135 Lessons 1-16. Conflict Resolution Principles 150 Lessons 1-16. Conflict Resolution for Different Groups 155 Lessons 1-15. Team Leadership 160 Lessons 1-14.	ToolingU
	Discuss acceptable and unacceptable work behaviors related to safety.	Web-Enhanced Lecture	Review OSHA Safety and Health Management Systems eTool	www.OSHA.gov
	Describe how to address improper workplace behavior.	Web-Enhanced Lecture	Read/Review Essentials of Communication 120	ToolingU
Learning	Discuss how to address employee performance issues, termination procedures and considerations.	Web-Enhanced Lecture	Read/Review Managing Performance: Corrective Actions 135	ToolingU
	Distinguish between the types of conflict individuals face.	Web-Enhanced Lecture	Read/Review Conflict Resolution Principles 150	ToolingU
	Discuss basic resolutions to address conflict in the workplace.	Web-Enhanced Lecture	Read/Review Conflict Resolution for Different Groups 155	ToolingU
	Discuss effective leadership, how teams are formed and how to resolve member conflict.	Web-Enhanced Lecture	Read/Review Team Leadership 160	ToolingU
Evaluation	Instructor observations, assign homework or quiz.			

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Session 8 Lesson Plan for: Eye, Face, Hearing, Hand, Foot, Head, and Body Safety Protection

Session Summary: This session discusses OSHA regulations governing common forms of personal protection and proper use of equipment.

Objectives:
Explain the importance of personal protective equipment (PPE).
Identify safety standards for personal protective equipment.
Identify PPE for eye, face, hearing, hand, foot, head, and body protection.
Explain potential hazards for these areas of exposure.
Distinguish proper equipment and use for areas of protection.

Description	Delivery Method	Activity	Materials
ToolingU Reading Assignment	Online learning	Safety - Personal Protective Equipment 120 Lessons 1-19 (assigned). Noise Reduction and Hearing Conservation 170 Lessons 1-15.	ToolingU
Discuss related protective equipment regulations.	Web-Enhanced Lecture	Review OSHA regulations pertaining to personal protection.	www.OSHA.gov
Discuss standards for selecting eye, face and hearing protection equipment.	Web-Enhanced Lecture	Read/Review Personal Protective Equipment 120 Lessons 1-10.	ToolingU
Discuss standards for selecting head and body protection equipment.	Web-Enhanced Lecture	Read/Review Personal Protective Equipment 120 Lessons 11-12 and 17-19.	ToolingU
Learning Discuss selection criteria for proper hand and foot protection equipment.	Web-Enhanced Lecture	Read/Review Personal Protective Equipment 120 Lessons 13-16.	ToolingU
Discuss methods to mitigate noise as well as types of hearing protection devices.	Web-Enhanced Lecture	Read/Review Noise Reduction and Hearing Conservation 170	ToolingU
Discuss common instances where eye, face, hands, feet and body protection is required.	Hands-on learning	In-house examine various types of protective equipment.	Select available safety materials for inspection (gloves, goggles, masks, helmets, suits, etc.)
Discuss common operations that generate excessive noise.	Hands-on learning	Select an exercise review the Noise Reduction Rating (NRR) calculation	Select available safety materials for hearing devices
Evaluation	Instructor observations, assign homework or quiz.		

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Session 9 Lesson Plan for: Respiratory Safety Protection

Session Summary: This session introduces respirators and why they are important. Additionally, we will cover selection standards and proper use of the equipment.

Objectives:
Identify safety standards for respiratory protection.
Explain potential respiratory hazards.
Identify personal protective equipment for respiratory safety.
Explain how to properly fit, use and maintain a respirator.

	<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
	ToolingU Reading Assignment	Online learning	Safety - Respiratory Safety 195 Lessons 1-18.	ToolingU
	Discuss head and body protection regulations.	Web-Enhanced Lecture	Review OSHA regulations pertaining to respiratory protection	www.OSHA.gov
	Discuss standards for selecting and operating types of respirators.	Web-Enhanced Lecture	Read/Review Respiratory Safety 195	ToolingU
Learning	Discuss common instances requiring respiratory protection.	Hands-on learning	In-house examine various types of respirator equipment	Select available forms of respiratory protection equipment
	Describe the importance of fit-testing.	Hands-on learning	Complete a mock-fit test	Fit-test kit
Evaluation	Instructor observations, assign homework or quiz.			

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Session 10 Lesson Plan for: Fire Prevention Plan

Session Summary: This session discusses regulations related to fire safety and prevention, various types of fires and proper use of extinguishing equipment.

Objectives:
Explain the importance of a fire prevention plan.
Define fire safety and prevention regulations.
Describe potential fire hazards.
Explain how to correctly select and operate a fire extinguisher.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Fire Safety and Prevention 110 Lessons 1-17 (assigned).

Materials

[ToolingU](#)

Discuss regulations related to fire safety.

Web-Enhanced Lecture

Review OSHA regulations related to fire safety

www.OSHA.gov

Learning

Describe various types of fire and the fire tetrahedron.

Web-Enhanced Lecture

Read/Review Fire Safety and Prevention 110 Lessons 5-12, 14, 15, and 17.

[ToolingU](#)

Describe how a fire extinguisher works and selection for appropriate use.

Hands-on learning

Present how a fire is properly extinguished. A video or animation should be used.

Extinguishers, burn-pan, fuel, torch-wick, fire gear or simulation unit/video for review

Evaluation Instructor observations, assign homework or quiz.

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Session 11 Lesson Plan for: Electrical Safety Work

Session Summary: This session gives a general overview of common electrical safety issues and related regulations.

Objectives:
Explain the importance of electrical safety.
Identify common electrical hazards in the workplace.
Define regulation standards for electrical safety.
Describe the purpose of a lockout/tagout device.
Explain how to perform a lockout/tagout procedure.

	Description	Delivery Method	Activity	Materials
	ToolingU Reading Assignment	Online learning	Electrical Systems - Safety for Electrical Work 115 Lessons 1-16. Mechanical Systems - Safety for Mechanical Work 105 Lessons 1-12. Safety - Lockout/Tagout Procedures 130 Lessons 1-17.	ToolingU
	Discuss regulations related to electrical safety.	Web-Enhanced Lecture	Review OSHA regulations related to electrical safety	www.OSHA.gov
Learning	Describe common electrical hazards found in industry.	Web-Enhanced Lecture	Read/Review Safety for Electrical Work 115	ToolingU
	Describe the safety procedures before performing maintenance on mechanical systems.	Web-Enhanced Lecture	Read/Review Mechanical Systems - Safety for Mechanical Work 105	ToolingU
	Discuss the purpose of lockout/tagout procedures.	Web-Enhanced Lecture	Read/Review Lockout/Tagout Procedures 130 Lessons 1-5 and 12-14.	ToolingU
	Complete a Lockout/Tagout operation for electrical energy.	Hands-on learning	Perform a Lockout/Tagout procedure	Locks, Hasps, Dummy Electrical Equipment
Evaluation	Instructor observations, assign homework or quiz.			

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Session 12

Lesson Plan for:

Preventive and Procedure Measures

Session Summary:

This session reviews basic medical issues, first aid procedures, related equipment and the importance of reporting workplace accidents.

Objectives:

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

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Bloodborne Pathogens 115 Lessons 1-14.

Materials

[ToolingU](#)

Define first aid and explain its role.

Web-Enhanced Lecture

Review common industry stances on what the role of first aid is. www.redcross.org

Discuss industry standards and regulations related to first aid and basic medical issues, including flushing stations.

Web-Enhanced Lecture

Review OSHA regulations related to first aid and medical requirements. www.OSHA.gov

Discuss bloodborne pathogens and prevention methods.

Web-Enhanced Lecture

Read/Review Bloodborne Pathogens 115

[ToolingU](#)

Learning

Describe appropriate applications of first aid and discuss universal precautions.

Hands-on learning

Application and glove-bag practice

Rubber gloves, barrier devices, shave cream or other simulated bodily fluid material, plastic bags, disinfection solution, and paper towels.

Discuss the importance of properly responding to workplace accidents safely and in a manner that preserves the accident scene.

Web-Enhanced Lecture

Provide an example of a workplace accident. Present or engage discussion for the appropriate course of action. Walk the students through this process.

In-house material and www.OSHA.gov

Review recordkeeping requirements, such as First Report of Injury (FROI), Worker's Compensation Issues, and

Web-Enhanced Lecture

Review in-house material and information at www.OSHA.gov

In-house material and www.OSHA.gov

Complete a mock log of injuries and trend analysis

Hands-on learning

Fill in a mock OSHA 300 log and look for trends that highlight unsafe locations, times of year, etc.

<https://www.osha.gov/recordkeeping/RKforms.html>

Evaluation

Instructor observations, assign homework or quiz.

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Session 13 Lesson Plan for: Safe Work Area

Session Summary: This session discusses regulations related to walking-working surfaces, the means of egress, hazard work areas and operations such as confined spaces.

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

Description

Delivery Method

Activity

Materials

ToolingU Reading Assignment

Online learning

Safety - Walking Working Surfaces 180 Lessons 1-19. Confined Spaces 190 Lessons 1-18.

[ToolingU](#)

Discuss OSHA standards related to walking-working surfaces and means of egress.

Web-Enhanced Lecture

Review OSHA regulations related to walking working surfaces

www.OSHA.gov

Discuss the importance of keeping work areas, walkways, and exits clear.

Web-Enhanced Lecture

Read/Review Walking Working Surfaces 180 Lessons 1-10 and 16-19.

[ToolingU](#)

Learning

Discuss OSHA regulations related to confined spaces, hot work, and permit-related safety.

Web-Enhanced Lecture

Review OSHA regulations related to permitting

www.OSHA.gov

Discuss the hazards of confined spaces, and the responsibilities of each employer and employee.

Web-Enhanced Lecture

Read/Review Confined Spaces 190

[ToolingU](#)

Review permit required instances where industries use customized safe-work permits.

Hands-on learning

Analyze a scenario that would require a confined space entry permit.

Simulate confined space, check air quality, harnesses, entry equipment, and sample permit.

Evaluation Instructor observations, assign homework or quiz.

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Session 14

Lesson Plan for:

Ergonomics in the Workplace

Session Summary:

This session will discuss ergonomics in the workplace, five categories of ergonomics and how to measure and mitigate potential issues.

Objectives:

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

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Hand and Power Tool Safety 145 Lessons 1-17. Fasteners - Safety for Assembly 105 Lessons 1-15. Intro to Fastener Ergonomics 130 Lesson 1-15.

Materials

[ToolingU](#)

Discuss five categories of known ergonomic issues.

Lecture

Review five types of ergonomic issues; anthropometric, musculoskeletal, cardiovascular, cognitive, psychomotor and psychosocial

Open

Discuss the ergonomic guidelines for manual material handling.

Web-Enhanced Lecture

Review common solutions to ergonomic issues accepted by OSHA, NIOSH and others.

<http://www.cdc.gov/niosh/docs/2007-131/>

Learning

Discuss the importance of hand and power tool safety.

Web-Enhanced Lecture

Read/Review Hand and Power Tool Safety 145 Lessons 14-16.

[ToolingU](#)

Discuss the general safety guidelines for assembly.

Web-Enhanced Lecture

Read/Review Safety for Assembly 105

[ToolingU](#)

Describe ergonomics and explain the study of maximizing both comfort and productivity for workspaces.

Web-Enhanced Lecture

Read/Review Intro to Fastener Ergonomics 130

[ToolingU](#)

Analyze common workspace ergonomic issues.

Hands-on learning

Ergonomic assessment - identify and record observed issues for improvement.

In-house assessment

Evaluation

Instructor observations, assign homework or quiz.

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Session 15 Lesson Plan for: Safety Procedures for Platforms and Manlifts

Session Summary: This session discusses powered platforms, manlifts, and vehicle-mounted platforms.

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

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Walking and Working Surfaces 180 Lessons 1-19 (assigned).

Materials

[ToolingU](#)

Discuss the similarities and differences between lifts and platforms and fall prevention considerations.

Web-Enhanced Lecture

Provide examples of lifts and platforms. This can be images for review.

Images of various lifts and platforms

Learning

Discuss OSHA regulations governing manlifts and powered platforms.

Web-Enhanced Lecture

Review OSHA regulations related to powered lifts and platforms

www.OSHA.gov

Describe the requirements for walking and working surfaces such as platforms, stairs, ladders, and scaffolds.

Web-Enhanced Lecture

Read/Review Walking and Working Surfaces 180 Lessons 7-10, 16-18. [ToolingU](#)

Review safe operation of equipment

Hands-on learning

Perform a safety operational review of a manlift or powered platform

In-house equipment, video or images of manlift/powerd platform can also be used

Evaluation

Instructor observations, assign homework or quiz.

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Session 16 Lesson Plan for: Management of Hazardous Materials

Session Summary: This session discusses the common types of hazardous materials found in industry and regulations that require appropriate communication of these hazards.

Objectives:
Identify different types of environmental safety hazards
Discuss hazardous materials used in manufacturing.
Explain types of exposure to hazardous materials.
Explain safety regulations for hazardous materials.
Describe Hazard Communication Standard (HCS) and its importance.
Describe Hazardous Material Identification System (HMIS) and its importance.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Environmental Safety Hazards 150 Lessons 1-16. SDS and Hazard Communication 160 Lessons 1-22 (assigned).

Materials

[ToolingU](#)

Discuss the different types and levels of environmental hazards in the workplace and how employees may be exposed to these hazards.

Web-Enhanced Lecture

Read/Review Environmental Safety Hazards 150

[ToolingU](#)

Learning

Describe how information about chemical hazards reaches the employee through labels, safety data sheets (SDS) and training.

Web-Enhanced Lecture

Read/Review SDS and Hazard Communication 160 Lessons 1-8 and 16-22. [ToolingU](#)

Discuss the OSHA Hazardous Communication Standard.

Web-Enhanced Lecture

Review the OSHA Hazard Communication Standard at www.OSHA.gov

www.OSHA.gov

Describe various forms of chemical hazards and classify them.

Web-Enhanced Lecture

Global Harmonized System symbol matching activity

Empty containers with mock properties and GHS labels.

Evaluation

Instructor observations, assign homework or quiz.

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Course:

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Session 17 Lesson Plan for: Requirements for Labeling

Session Summary: This session discusses common hazardous materials labeling systems used in industry.

Objectives:
Explain the purpose of Globally Harmonized System (GHS).
Identify OSHA's requirements for labeling procedures.
Define various types of hazardous material identification systems.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - SDS and Hazard Communication 160 Lessons 1-22 (assigned).

Materials

[ToolingU](#)

Learning

Demonstrate different types of labels used for identify chemicals. Web-Enhanced Lecture

Provide examples of chemical container labels. This can be in-house material or images for review. Chemical container labels

Discuss the coloring and coding of hazardous container labels. Web-Enhanced Lecture

Review In-house Material and DOT labeling information found on the DOT website [In-house material: http://www.phmsa.dot.gov/](http://www.phmsa.dot.gov/)

Discuss the Global Harmonized System labels. Web-Enhanced Lecture

Read/Review SDS and Hazard Communication 160 Lessons 9-11. [ToolingU](#)

Evaluation Instructor observations, assign homework or quiz.

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Course:

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Session 18 Lesson Plan for: Hazard Communication Standards

Session Summary: This session discusses Safety Data Sheets (SDS) as required by the OSHA Hazardous Communication Standard.

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

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - SDS and Hazard Communication 160 Lessons 1-22 (assigned).

Materials

[ToolingU](#)

Learning

Discuss Safety Data Sheet (SDS) requirements and how to interpret the information found on the sheet and requirements for acquiring an SDS sheet.

Web-Enhanced Lecture

Read/Review SDS and Hazard Communication 160 Lessons 12-15 and 20. [ToolingU](#)

Evaluation Instructor observations, assign homework or quiz.

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Session 19 Lesson Plan for: Hazardous Material Handling and Storage

Session Summary: This session will discuss proper handling and storage of hazardous materials as well as review standard guidelines for shipping these materials.

Objectives:
Define regulations for handling and storing hazardous material.
Describe the responsibilities of the DOT for hazardous material.
Define the requirements for shipping hazardous materials.

<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
ToolingU Reading Assignment	Online learning	Safety - Flammable and Combustible Liquids 155 Lessons 1-16. ToolingU	
Discuss OSHA regulations related to hazardous material's storage and handling.	Web-Enhanced Lecture	Review OSHA regulations at www.OSHA.gov	www.OSHA.gov
Describe hazards associated with flammable and combustible liquids and discuss safe storage and handling methods.	Web-Enhanced Lecture	Read/Review Flammable and Combustible Liquids 155.	ToolingU
Discuss Department of Transportation (DOT) shipping and handling requirements.	Web-Enhanced Lecture	Review the DOT hazmat shipping requirements at the DOT website	http://www.phmsa.dot.gov/
Review the DOT Hazardous Materials Table and related shipping requirements, such as shipping papers, labels, and placards.	Web-Enhanced Lecture	Complete a shipping paper and select placards	http://www.phmsa.dot.gov/

Evaluation Instructor observations, assign homework or quiz.

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Session 20 Lesson Plan for: Management of Hazardous Waste

Session Summary: This session will discuss issues related to management of hazardous waste generated during machining operations.

Objectives:
Explain the importance of hazardous waste management.
Describe the environmental safety and health hazardous exposure can create.
Define waste management responsibilities of the Environmental Protection Agency (EPA).
Define waste management responsibilities of the International Standards Organization (ISO).
Explain regulated procedures and action required for contaminated areas.

	<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
	ToolingU Reading Assignment	Online learning	Safety - Environmental Safety Hazards 150 Lessons 1-16 (assigned).	ToolingU
	Discuss hazardous waste and the role the Environmental Protection Agency (EPA) and Resource Conservation and Recovery Act (RCRA) have.	Web-Enhanced Lecture	Review historical information and RCRA regulations	www.EPA.gov
	Discuss what ISO is and its relevant guidelines related to environmental management.	Web-Enhanced Lecture	Review ISO International Organization for Standardization guidelines at www.iso.org	www.iso.org
Learning	Describe response guidelines for spills, including OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER).	Web-Enhanced Lecture	Review the OSHA HAZWOPER Standard at www.OSHA.gov	www.OSHA.gov
	Discuss types of potential hazards such as chemical, biological, physical, ergonomic, and forms of exposure.	Web-Enhanced Lecture	Read/Review Environmental Safety Hazards 150 Lessons 3-15.	ToolingU
	Implement a spill response guide and discuss measures one should take in such an event.	Hands-on learning	Perform a mock spill or discuss actions taken.	Spill kit, decontamination kit, drum over pack, and emergency response guide.
Evaluation	Instructor observations, assign homework or quiz.			

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Session 21 Lesson Plan for: Lubricants

Session Summary: This session discusses common management issues related to lubricants.

Objectives:
Describe the purpose of metalworking fluids.
Define the advantages of using lubricants in metalworking process.
Identify potential hazards due to exposure.
Explain proper disposal and recycling practices for lubricants.

	<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
	ToolingU Reading Assignment	Online learning	Safety - Metalworking Fluid Safety 165 Lessons 1-19.	ToolingU
Learning	Describe the health and safety risks related to metalworking fluids and discuss practices to reduce exposure.	Web-Enhanced Lecture	Read/Review Metalworking Fluid Safety 165.	ToolingU
	Discuss proper disposal and recycling lubricants.	Web-Enhanced Lecture	Review disposal regulations	www.EPA.gov
Evaluation	Instructor observations, assign homework or quiz.			

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Session 22 Lesson Plan for: Machine Safety Hazards

Session Summary: This session will discuss issues related to safe operations of machinery, including personal hygiene and machine guarding.

Objectives:
Describe safety standards for machine operation.
Identify appropriate clothing for machine operation.
Describe the use of machine guards on machine tool equipment.
Identify different types of machine guards and safeguarding devices.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Machine Guarding 140 Lessons 1-16.

Materials

[ToolingU](#)

Learning

Discuss hygiene guidelines all machine operators should be aware of such as removing jewelry, tying back hair and loose clothing.

Web-Enhanced Lecture

Review OSHA regulations for machine operation

www.OSHA.gov

Discuss common safety issues related to machinery, its devices and actions for operation.

Web-Enhanced Lecture

Read/Review Machine Guarding 140 Lessons 1-16

[ToolingU](#)

Evaluation Instructor observations, assign homework or quiz.

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 23 Lesson Plan for: Mechanical System Procedures

Session Summary: This session will discuss the necessary measures to control and release hazardous energy prior to servicing and maintaining equipment.

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

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Lockout/Tagout Procedures 130 Lessons 1-17 (assigned).

Materials

[ToolingU](#)

Discuss regulated standards of a lockout/tagout procedure

Web-Enhanced Lecture

Review OSHA regulations pertaining to lockout/tagout

www.OSHA.gov

Learning

Describe how to perform various types of lockout/tagout procedures, such as double-block and bleed, blanking, and other energy isolation techniques.

Web-Enhanced Lecture

Read/Review Lockout/Tagout Procedures 130 Lessons 6-17. [ToolingU](#)

Perform a lockout/tagout on a non-electrical process

Hands-on learning

Perform a lockout/tagout procedure

Hasps, locks, tags, valve covers, etc.

Evaluation Instructor observations, assign homework or quiz.

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 24 Lesson Plan for: Handling Tools Safely

Session Summary: This session will cover various types of tools such as cutting, portable power, hand and pneumatic tools. As well as discuss common safety regulations related to each.

Objectives:
Describe safety regulations for hand and power tools.
Explain proper tool maintenance procedures.
Describe the importance of cutting safety.
Identify types of metal cutting hazards.
Explain guidelines for cutting metal safety.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Hand and Power Tool Safety 145 Lessons 1-17 (assigned). Metal Cutting - Safety for Metal Cutting 115 Lessons 1-15.

Materials

[ToolingU](http://ToolingU.com)

Review OSHA standards related to hand and portable power tools.

Web-Enhanced Lecture

Review regulations at www.OSHA.gov

www.OSHA.gov

Learning

Discuss general safety guidelines, common uses of tools as well as methods of adjustment and considerations.

Web-Enhanced Lecture

Read/Review Hand and Power Tool Safety 145.

www.toolingu.com

Discuss safety hazards associated with cutting and ways to avoid injury.

Web-Enhanced Lecture

Read/Review Safety for Metal Cutting 115.

www.toolingu.com

Evaluation

Instructor observations, assign homework or quiz.

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 25 Lesson Plan for: Fixed and Portable Ladder Safety

Session Summary: This session discusses common use and safety requirements related to fixed and portable ladders.

Objectives:
Describe safety requirements for using a ladder.
Explain the importance of proper maintenance and inspection of ladders.
Identify different types of ladders and their load ratings.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Walking and Working Surfaces 180 Lessons 1-19 (assigned).

Materials

[ToolingU](#)

Learning

Review OSHA standards related to fixed and portable ladders.

Web-Enhanced Lecture

Review regulations at www.OSHA.gov

www.OSHA.gov

Discuss common types of ladders, both fixed and portable, and their usage and care requirements.

Web-Enhanced Lecture

Read/Review Walking and Working Surfaces 180 Lessons 11-16.

[ToolingU](#)

Evaluation Instructor observations, assign homework or quiz.

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 26 Lesson Plan for: Lifting and Movement Practices

Session Summary: This session will discuss methods for lifting and moving materials and address safety concerns related to using such devices.

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

	<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
	ToolingU Reading Assignment	Online learning	Rigging - Lifting and Moving Equipment 130 Lessons 1-18. Rigging Inspection and Safety 210 Lessons 1-15.	ToolingU
Learning	Discuss different types of tools used for manually moving equipment and materials such as hand carts and pry trucks.	Web-Enhanced Lecture	Read/Review Lifting and Moving Equipment 130	ToolingU
	Discuss proper safety procedures for using lifting devices and moving equipment.	Web-Enhanced Lecture	Read/Review Rigging Inspection and Safety 210	ToolingU

Evaluation Instructor observations, assign homework or quiz.

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 27 Lesson Plan for: Forklift Operation and Safety

Session Summary: This session discussed the various types of powered industrial trucks (forklifts) and related safety requirements.

Objectives:
Define powered industrial trucks.
Explain certification requirements for power industrial truck operators.
Describe safety regulations for power industrial truck operators.
Explain how to perform a prestart inspection.
Describe forklift stability and design.
Identify proper safety procedures for lifting and transporting loads.

Description

ToolingU Reading Assignment

Delivery Method

Online learning

Activity

Safety - Powered Industrial Truck Safety 210 Lessons 1-19.

Materials

[ToolingU](#)

Learning

Discuss different types of powered industrial trucks along with their uses and limitations.

Web-Enhanced Lecture

Read/review Powered Industrial Truck Safety 210

[ToolingU](#)

Discuss OSHA regulations related to powered industrial trucks.

Web-Enhanced Lecture

Review OSHAs Powered Industrial Truck Standard

www.OSHA.gov

Demonstrate the operation of a powered industrial truck.

Hands-on learning

Provide a simple obstacle course for individuals 18 or older

Forklift, cones, empty pallet

Evaluation Instructor observations, assign homework or quiz.

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 28 Lesson Plan for: Machine Rigging

Session Summary: This session will discuss rigging equipment and considerations such as types of slings, inspections, and tension generated by angles and hitches.

Objectives:
Define the purpose of rigging.
Describe safety procedures for rigging operations.
Describe inspection procedures for rigging.
Explain how to calculate the weight of a load to its center of gravity.

<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
ToolingU Reading Assignment	Online learning	Safety - Safety for Lifting Devices 135 Lessons 1-18. Rigging - Intro to Machine Rigging 110 Lessons 1-15. Rigging Mechanics 220 Lessons 1-20.	ToolingU
Discuss OSHA regulations related to rigging.	Web-Enhanced Lecture	Review appropriate regulations at www.OSHA.gov	www.OSHA.gov
Define rigging and discuss components of rigging systems, safety requirements and potential failure issues.	Web-Enhanced Lecture	Read/review Safety for Lifting Devices 135 Lessons 1-9 and 11-14.	ToolingU
Learning Discuss devices and methods used in rigging, information needed to calculate a load, proper protective equipment and inspection procedures.	Web-Enhanced Lecture	Read/review Intro to Machine Rigging 110	ToolingU
Discuss how to calculate the weight of a load, vertical and horizontal force, and determine its center of gravity.	Web-Enhanced Lecture	Read/review Rigging Mechanics 220 Lessons 16-19.	ToolingU
Inspect and use rigging equipment.	Hands-on learning	Inspect and use different rigging equipment	Hooks, chains, calipers, slings, and chokers
Evaluation	Instructor observations, assign homework or quiz.		

Degree/Diploma:

Diversified Manufacturing Technology

Course:

Introduction to Industrial Safety

Session 29 **Lesson Plan for:** Hoists and Cranes

Session Summary: This session discusses the appropriate use of hoists and cranes.

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

<u>Description</u>	<u>Delivery Method</u>	<u>Activity</u>	<u>Materials</u>
ToolingU Reading Assignment	Online learning	Safety - Safety for Lifting Devices 135 Lessons 1-18 (assigned).	ToolingU

Learning	Discuss types of hoists and cranes used in industry and safe operating practices for these devices.	Web-Enhanced Lecture	Read/Review Safety for Lifting Devices 135 Lessons 6-18.	ToolingU
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Evaluation Instructor observations, assign homework or quiz.