Lesson Plans for Module 00100

Build Your Future in Construction

Build Your Future in Construction (Module 00100) introduces trainees to the construction industry. The module introduces the history of construction and the outlooks for construction jobs; the benefits of a career in construction; the typical career progression for craft professionals; the different careers available and the skills they require; how to pursue a construction career through career and technical education, craft training and apprenticeships, and community colleges and universities.

Objectives

Learning Objective 1
Describe the construction industry.

a. Define construction and summarize the current and future outlook for jobs.
b. Identify some of construction's more prominent contributions in history.

Learning Objective 2
Explain the benefits of a construction career.

a. Recognize and describe how construction careers make a difference in the community.
b. Describe the financial and professional benefits of pursuing a construction career.

Learning Objective 3
Describe the typical career path for craft professionals.

a. Describe industry sectors and the progression path for construction careers.
b. Identify different construction careers and the types of skills they require.

Learning Objective 4
Identify ways to pursue a career in the construction industry.

a. Explain the benefits of career and technical education programs.
b. Describe the advantages of craft training programs and their relationship with apprenticeships.
c. Summarize the path to a construction career through community colleges and universities.

Performance Tasks

This is a knowledge-based module. There are no Performance Tasks.

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

There are no safety considerations related to this module.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Equipment and Materials for Laboratories and Performance Testing

None are required for this module.

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

None

Instructors are encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Materials Checklist for Module 00100, Build Your Future in Construction

Equipment and Materials					
Personal protective equipment:					
None					
Whiteboard/chalkboard					
Markers/chalk					
Pencils and paper					
Core PowerPoint® Presentations and/or Dynamic Study Modules					
Computer					
Copies of the Module Exam					

To the extent possible, and as required for performance testing, provide a selection of the tools listed for each section; alternatively, photos may be used to teach tool identification.

Lesson Plans for Module 00101

Basic Safety (Construction Site Safety Orientation)

Basic Safety (Module 00101) explains the importance of safety in the construction and industrial crafts. Trainees will learn how to identify and follow safe work practices and procedures and how to properly inspect and use safety equipment. Trainees will be able to describe the safety practices associated with elevated work; energy release; and various hazards encountered on job sites. **NOTE:** The successful completion of this module will award a Construction Site Safety Orientation credential.

Objectives

Learning Objective 1

Explain the benefits of safety, the cost of workplace incidents, and ways to reduce related hazards.

a. Describe the types of workplace incidents along with physical and monetary impacts.
b. Summarize the causes and consequences of common incidents.
c. Explain how to recognize, evaluate, and control workplace hazards.

Learning Objective 2

Describe common fall hazards and methods to prevent them.

a. Summarize the most common types of construction fall hazards.
b. Describe components of effective fall arrest systems and how they prevent or halt falls.
c. Explain how to use ladders and stairs safely.
d. Identify key steps to ensuring scaffolds are assembled and used safely.

Learning Objective 3

Recognize and avoid struck-by and caught-in-between hazards.

a. Describe struck-by hazards and how to avoid them.
b. Describe common caught-in/caught-between hazards and steps that can prevent them.

Learning Objective 4

Identify common electrical hazards and how to avoid them.

a. Summarize basic job-site electrical safety guidelines.
b. Explain the importance of disabling equipment as well as basic lockout/tagout procedures.

Learning Objective 5

Associate personal protective equipment (PPE) with the hazards they reduce or eliminate.

a. Explain how PPE is used to protect craftworkers from different types of injuries.
b. Explain how respirators protect craftworkers from respiratory dangers.

Learning Objective 6

Describe safety practices used with other common job-site hazards.

a. List other types of hazards craftworkers may encounter.
b. Describe common environmental hazards and how craftworkers should respond to them.
c. Summarize hazards associated with hot work.
d. Identify fire hazards and describe basic fire fighting procedures.
e. Name different types of confined spaces and how to avoid related hazards.

Performance Tasks

Performance Task 1 (Learning Objective 2)

Properly set up and climb/descend an extension ladder, demonstrating proper three-point contact.

Performance Task 2
(Learning Objectives 2 and 5)

Inspect the following PPE items and determine if they are safe to use:

- Eye protection
- Hearing protection
- Hard hat
- Gloves
- Fall arrest harnesses
- Lanyards
- Connecting devices
- Approved footwear

Performance Task 3
(Learning Objectives 2 and 5)

Properly don, fit, and remove the following PPE items:

- Eye protection
- Hearing protection
- Hard hat
- Gloves
- Fall arrest harness

Performance Task 4 (Learning Objective 4)

Inspect a typical power cord and GFCI to ensure their serviceability.

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

During this module, trainees will be required to set up, climb, and descend an extension ladder. The trainees should be carefully supervised during this activity and should be required to wear the PPE they would normally wear on a job site. Climbing/descending using three-point contact is an essential part of this activity.

Classroom Equipment and Materials

- Whiteboard/chalkboard
- Markers/chalk
- Pencils and paper
- *Core* PowerPoint® and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e
- LCD projector and screen
- Computer with Internet access
- Copies of the Performance Profile Sheets
- Stepladder
- Examples of scaffold tags

Equipment and Materials for Laboratories and Performance Testing

- Appropriate PPE:
  - Eye protection
  - Work gloves
  - High-top safety shoes
  - Hearing protection
  - Hard hat
- Double-insulated power tool
- Job safety analysis (JSA) example documents
- Task safety analysis (TSA) example documents
- Examples of SDS
- Fall arrest harnesses in various sizes
- Lanyards
- Carabiners
- Double-locking snap hooks
- Extension ladder
- Ground fault circuit interrupter (GFCI)
- Damaged and undamaged extension cords
- Various types of respirators
- Provide both defective and serviceable examples of the following items:
  - Eye protection, such as safety glasses and face shields
  - Hearing protection, including ear plugs and ear muffs
  - Hard hats
  - Work gloves
  - High-top safety shoes

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Basic Construction Safety and Health. Fred Fanning. 2014. CreateSpace Independent Publishing Platform.

Construction Project Safety. John Schaufelberger, Ken-Yu Lin. 2013. John Wiley & Sons, Inc.

Management of Construction Projects: A Constructor's Perspective. John Schaufelberger, Len Holm. Second Edition. 2017. Routledge.

US Occupational Safety and Health Administration. Numerous safety videos are available online at **www.osha.gov/video**.

Instructors are encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to safety and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00102

Introduction to Construction Math

Introduction to Construction Math (Module 00102) introduces trainees to basic math skills needed in the construction environment. The module reviews whole numbers and fractions; working with decimals; the four primary math operations; reading rulers and tape measures; the inch-pound and metric units of measurement; basic geometric figures; and area and volume calculations for two-dimensional and three-dimensional objects.

Objectives

Learning Objective 1
Identify whole numbers and solve basic arithmetic problems with them.

a. List the key qualities of whole numbers and summarize their place values.
b. Add and subtract whole numbers.
c. Multiply and divide whole numbers.

Learning Objective 2
Name fraction types and calculate with fractions.

a. Define equivalent fractions and calculate their lowest common denominators.
b. Define improper fractions and convert them into mixed numbers.
c. Add and subtract fractions.
d. Multiply and divide fractions.

Learning Objective 3
Identify decimal numbers and calculate with them.

a. List the key qualities of decimal numbers and summarize their place values.
b. Add, subtract, multiply, and divide decimal numbers.
c. Convert between decimals, fractions, and percentages.

Learning Objective 4
Name the common length-measuring tools and use them to measure lengths accurately.

a. Describe English and metric rulers, using them correctly to measure lengths.
b. Describe English and metric measuring tapes, using them correctly to measure lengths.

Learning Objective 5
Name common length, weight, volume, and temperature units in both the inch-pound and metric systems and convert them into other comparable units.

a. List and convert between common inch-pound and metric length units.
b. List and convert between common inch-pound and metric weight units.
c. List and convert between common inch-pound and metric volume units.
d. List and convert between common inch-pound and metric temperature units.

Learning Objective 6
Classify angles and geometric shapes, as well as calculating their areas or volumes.

a. List each angle type.
b. Name common geometric shapes and summarize their qualities.
c. Calculate the area of two-dimensional shapes.
d. Calculate the volume of three-dimensional shapes.

Performance Tasks

Performance Task 1 (Learning Objective 4)
Using a measuring tape, measure lumber pieces in both English and metric units.

Performance Task 2 (Learning Objective 4)
Using a measuring tape, measure a room-sized space in both English and metric units.

Performance Task 3 (Learning Objective 4)
Using a measuring tape, determine a short inside measurement in both English and metric units.

Performance Task 4 (Learning Objective 4)
Add English measurements that include fractions.

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

The are no safety considerations related to this module.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Equipment and Materials for Laboratories and Performance Testing

Calculators

Rulers

Tape measures

Pieces of lumber of varying sizes

Pieces of pipe of varying sizing

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Mathematics for Carpentry and the Construction Trades. Alfred P. Webster, Kathryn E. Bright. 2012. Upper Saddle River, NJ: Prentice Hall.

Mathematics for the Trades: A Guided Approach. Hal Saunders, Robert A. Carman. 2018. Upper Saddle River, NJ: Pearson Learning.

Using Math in Construction: Math You Will Actually Use. Colin Wilkinson. 2017. Rosen Central.

A number of online resources are available for trainees who would like more information on trade-related math skills.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. Well-produced videos can provide learning approaches that may be helpful to some trainees. Be prepared to stop the videos at appropriate times to point out and discuss the topic.

Instructors are encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00103
Introduction to Hand Tools

Introduction to Hand Tools (Module 00103) instructs trainees in the identification, use, and care of hand tools. Developing the knowledge to properly choose and safely use hand tools is an essential part of the construction industry.

Objectives

Learning Objective 1
Name common hand tools and state how to use them.

a. Identify various hammers and demolition tools and explain how to use them.
b. Describe chisels and punches and how they are used.
c. Match screwdrivers to the appropriate hardware.
d. Differentiate between non-adjustable, adjustable, and socket wrenches.
e. Describe various types of pliers and explain how they are used.

Learning Objective 2
Identify common measurement and layout tools and describe how to use them.

a. Explain how to use a variety of measuring tools.
b. Define various types of levels and layout tools and indicate how they are used.

Learning Objective 3
Identify and describe other hand tools common to shops and job sites.

a. Differentiate between various handsaws and their designated applications.
b. Identify common clamp designs.
c. Explain how different files and utility knives are used with various materials.
d. Describe shovels and picks and the tasks for which each one is best suited.

Performance Tasks

Performance Task 1
(Learning Objectives 1 through 3)

Inspect and demonstrate the safe and proper use of the following hand tools:

- Hammers
- Demolition tools
- Chisels and punches
- Screwdrivers
- Adjustable wrenches
- Non-adjustable wrenches
- Sockets
- Pliers
- Tape measures
- Levels
- Squares
- Handsaws
- Clamps
- Files
- Utility knives
- Shovels

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

Trainees will be handling and working with a wide variety of hand tools. Ensure that trainees are equipped with the appropriate PPE at all times, including times when they are examining hand tools in the classroom environment. All work with hand tools must be directly supervised by the instructor to ensure the safety of the trainees.

Classroom Equipment and Materials

Whiteboard/chalkboard
Markers/chalk
Pencils and paper
Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e
LCD projector and screen
Computer with Internet access
Copies of Performance Profile sheets

Equipment and Materials for Laboratories and Performance Testing

Appropriate PPE:
- Safety glasses
- Work gloves

Old and/or unusual hand tools
Hammers and demolition tools
Chisels and punches
Different types of screwdrivers
Non-adjustable and adjustable wrenches
Socket sets and torque wrenches
Measuring tapes and rules
Levels
Squares
Plumb bobs
Chalk lines
Handsaws
Files and rasps
Utility knives
Shovels, picks, and related earth-working tools
Various types of clamps
Proper footwear as designated by the instructor or training facility provider
Hard hats as required by the instructor, training provider, or the environment
Screwdrivers
Pliers
Wire cutters
Measuring tools
Layout tools
Files
Shovels or similar earth tools
Chain falls and hoists
Clamps
Framing lumber for cutting
Bolts and nuts
Nails
Screws
Scrap metal for filing or cutting
Scrap wire for cutting
Tape measures

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Hand Tool Basics. Steve Branam. 2018. Des Moines, IA: Popular Woodworking Books.

Essential Guide to the Steel Square: How to Figure Everything Out with One Simple Tool, No Batteries Required. Ken Horner. 2016. Mount Joy, PA: Fox Chapel Publishing.

The Tool Book: A Tool Lover's Guide to More Than 200 Hand Tools. Phil Davy, Luke Edwardes-Evans, Jo Behari, Matthew Jackson. 2018. New York, NY: DK Publishing.

There are a number of online resources available for trainees who would like more information on the proper and safe use of hand tools. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in both proper and improper work processes and behaviors. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct and techniques.

Instructors are also encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00104

Introduction to Power Tools

Introduction to Power Tools (Module 00104) identifies and describes some of the power tools used by construction workers. The construction of each tool is discussed, along with information regarding the safe usage and typical maintenance requirements of power tools.

Objectives

Learning Objective 1

Identify and explain how to use various types of power drills and impact wrenches.

a. Summarize basic power tool safety guidelines.
b. Identify common power drills and bits and explain how to use them.
c. Describe the difference between hammer drills and impact drivers.
d. Identify pneumatic drills and impact wrenches and explain how to use them.

Learning Objective 2

Identify and explain how to use various types of power saws.

a. Explain how to use a circular saw and identify different types of blades.
b. Differentiate between jigsaws and reciprocating saws and explain how to use them.
c. Explain how to use a portable band saw.
d. Describe the difference between miter saws and cutoff saws.
e. Explain how to use table saws and describe the types of jobs for which they are best suited.

Learning Objective 3

Describe the types of jobs best suited to grinders and oscillating multi-tools.

a. Explain how to use various types of grinders.
b. Identify grinder accessories and the jobs for which they are used.
c. List the type of jobs that can be performed using an oscillating multi-tool.

Learning Objective 4

Identify and explain how to use miscellaneous power tools.

a. Discuss the hazards of using power nailers.
b. Describe jobs that can be performed with hydraulic jacks.

Performance Task

Performance Task 1

(Learning Objectives 1 through 4)

Safely and properly demonstrate the use of the following tools:

- Electric drill (corded or cordless)
- Hammer drill
- Impact driver
- Circular saw
- Jigsaw
- Reciprocating saw
- Portable band saw
- Miter or cutoff saw
- Table saw
- Portable or bench grinder
- Oscillating multi-tool
- Power nailer

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

This module requires that trainees handle and demonstrate the proper use of various power tools. Since this is the first module encountered by new trainees that requires them to work with energized tools and equipment, it is essential to ensure that all trainees don and use the correct PPE at all times. Instructors must observe trainees carefully and consistently to ensure that positive safety habits begin to form. Trainees should only handle power tools—energized or non-energized—under your direct supervision.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Copies of Performance Profile Sheets

Equipment and Materials for Laboratories and Performance Testing

Appropriate PPE:

- Safety glasses
- Face shields
- Work gloves
- Safety shoes
- Hard hats

One or more types of power drill, with chuck key

Hammer drill

Samples of fractional, metric, numbered, lettered, and masonry drill bits

Pneumatic drill

Pneumatic hose whip check

Impact wrench (pneumatic or electric)

Circular saw

Saber saw

Reciprocating saw

Portable band saw

Miter and/or cutoff saw

Angle grinder

Detail grinder

Bench grinder

Grinding wheel for a bench grinder

Pneumatic nail gun

Powder-actuated fastening gun

Pneumatic impact wrench

Pavement breaker

Hydraulic jack

The following power tools are required to conduct the laboratory:

- Electric drill (corded or cordless)
- Hammer drill
- Impact driver
- Circular saw
- Jigsaw
- Reciprocating saw
- Portable band saw
- Miter or cutoff saw
- Table saw
- Portable or bench grinder
- Oscillating multi-tool
- Power nailer

Scrap wood and metal for drilling, sawing, grinding, etc.

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

29 CFR 1926, OSHA Construction Industry Regulations. Latest Edition. Washington, DC: Occupational Safety and Health Administration, US Department of Labor, US Government Printing Office.

Build Stuff with Wood: Make Awesome Projects with Basic Tools. Asa Christiana. 2017. Newtown, CT: Taunton Press. Power Tool Institute, Inc. 1300 Sumner Avenue, Cleveland, OH 44115-2851, USA. **www.powertoolinstitute.com**.

Woodworking with Power Tools: Tools, Techniques, and Projects. 2019. Newtown, CT: Taunton Press.

There are a number of online resources available for trainees who would like more information on power tools and related safety practices, guidelines, and requirements. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in both proper and improper work processes and behaviors. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct and techniques.

Instructors are also encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00105

Introduction to Construction Drawings

Introduction to Construction Drawings (Module 00105) provides trainees with the information and skills needed to read and understand construction drawings. This module includes a set of two oversize drawings, which is included as *Appendix D* in the Trainee Guide.

Objective

Learning Objective 1

Describe components and features used in construction drawings and identify how the drawings are different.

a. Summarize the purpose of the six basic construction drawing components.
b. List and explain the significance of various drawing elements, such as lines of construction, symbols, and grid lines.
c. Explain how dimensions relate to various drawing scales.
d. Demonstrate how to use engineer's and architect's scales.
e. Identify the six types of construction drawings.

Performance Task

Performance Task 1

(Learning Objective 1)

Using the residential floor plan and elevations supplied in the *Appendix D*:

- Locate the wall common to bedroom #3 and the garage.
- Determine the overall width of the home.
- Calculate the distance from the outside northwest corner of the house to the center of the window in bedroom #2.
- Determine the overhang of the eaves.
- Using an architect's scale, determine the width of the garage.

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

There are no safety considerations for this module.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Copies of the Performance Profile Sheets

Equipment and Materials for Laboratories and Performance Testing

Drawing set supplied with this module

Complete drawing package for a typical residence or similar simple structure

Calculators

Architect's scales

Engineer's scales

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Autodesk, 1 Market St., Suite 500, San Francisco, CA 94105, USA; 3D design, engineering, and entertainment software and parent company of the AutoCAD software suite: **www.autodesk.com**.

Blueprint Reading for the Construction Trades. Peter A. Mann. 2005: Ontario, Canada: **Micro-Press.com**.

Datacad, P.O. Box 815, Simsbury, CT 06070, USA. Windows-based CADD solutions: **www.datacad.com**.

Printreading for Residential Construction. Leonard P. Toenjes. 2021. Orland Park, IL: American Technical Publishers.

Reading Architectural Plans for Residential and Commercial Construction. Ernest R. Weidhaas. 2001. Englewood Cliffs, NJ: Prentice Hall Career & Technology.

Reading Architectural Working Drawings. Edward J. Muller, Phillip A. Grau III. 2004. Upper Saddle River, NJ: Prentice Hall.

A number of online resources are available for trainees who would like to learn more about construction drawings. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in both proper and improper work processes and behaviors. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct and techniques.

Instructors are encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00106
Introduction to Basic Rigging

Introduction to Basic Rigging (Module 00106) identifies different types of rigging slings and hardware and describes how those items are used. It explains how to properly inspect slings and hardware items. It also examines different types of hoists used in rigging, and it describes common rigging hitches and how to make the Emergency Stop hand signal. Note that no level of certification or competency is awarded to trainees after completing this module; the content is designed strictly for familiarization.

NOTE: This module is an elective.
It is not required for successful completion of *Core*.

Objectives

Learning Objective 1
Identify and describe various types of rigging slings, hardware, and equipment.

a. Identify and describe various types of slings.
b. Describe how to inspect various types of slings.
c. Identify and describe how to inspect common rigging hardware.
d. Identify and describe various types of hoists.
e. Identify and describe basic rigging hitches and the related Emergency Stop hand signal.

Performance Tasks

Performance Task 1
(Learning Objective 1)
Demonstrate the proper ASME Emergency Stop hand signal.

Performance Task 2
(Learning Objective 1)
Demonstrate the ability to report the load capacity of a sling, and if the sling is too damaged to use.

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

This module requires that trainees handle common types of rigging equipment. Included in this equipment are synthetic, alloy steel chain, and wire rope slings; rigging hardware, such as shackles, eyebolts, lifting clamps, and hooks; and different types of hoists. Trainees should be carefully observed to ensure that they wear the proper PPE, follow safe practices, and give due respect to the hazards associated with rigging equipment and activities.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Copies of the Module Exam and Performance Profile Sheets

Equipment and Materials for Laboratories and Performance Testing

Appropriate PPE:

- Safety glasses
- Work gloves

Damaged synthetic slings

Damaged alloy steel chain slings

Damaged wire rope slings

Several types of shackles, some of which are damaged

Several types of eyebolts, some of which are damaged

Several types of lifting clamps, some of which are damaged

Several types of hooks, some of which are damaged

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Bob's Rigging and Crane Handbook. Bob De Benedictis. Third Edition. 2012. Leawood, KS: Pellow Engineering Services, Inc.

Rigging. James Headley. 2012. Sanford, FL: Crane Institute of America, Inc.

Rigging Handbook. Jerry A. Klinke. 2016. Stevensville, MI: ACRA Enterprises, Inc.

Rigging Math Made Simple. Delbert L. Hall. 2019. Johnson City, TN: Spring Knoll Press.

Rigging Safety in Construction Environments DVD Kit. Port Washington, NY: Global Industrial.

A number of online resources are available for trainees who would like more information on safety practices, guidelines, and requirements related to rigging. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in both proper and improper work processes and behaviors. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct and techniques.

Instructors are also encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00107

Basic Communication Skills

Basic Communication Skills (Module 00107) provides trainees with the information and skills needed to communicate effectively and clearly. Developing good communication skills enables construction professionals to become confident, reliable assets to their crafts.

Objectives

Learning Objective 1

Describe the communication, listening, and speaking processes and their relationship to job performance.

a. Describe the communication process and the importance of listening and speaking skills.
b. Describe the listening process and identify good listening skills.
c. Describe the speaking process and identify good speaking skills.

Learning Objective 2

Describe good reading and writing skills and their relationship to job performance.

a. Describe the importance of good reading and writing skills.
b. Describe job-related reading requirements and identify good reading skills.
c. Describe job-related writing requirements and identify good writing skills.

Performance Tasks

Performance Task 1

(Learning Objective 1)

Perform a given task after listening to oral instructions.

Performance Task 2

(Learning Objective 2)

Fill out a work-related form provided by your instructor.

Performance Task 3

(Learning Objective 2)

Read and interpret a set of instructions for properly donning a safety harness and then orally instruct another person on how to don the harness.

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

During the course of this module, trainees may be in the vicinity of electrical energy sources and potentially hazardous tools, equipment, and materials. In those instances, trainees should be carefully observed to ensure that they wear the proper PPE, follow safe practices, and give due respect to the hazards associated with the energy sources, tools, equipment, and materials.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Copies of the Performance Profile Sheets

Equipment and Materials for Laboratories and Performance Testing

Copies of Figure 3: Are You a Good Listener?

Copies of Figure 4: Are You a Good Speaker?

Several prepared scripts of instructions to be read by one trainee and executed by another

One or more fall-arrest harnesses

One or more copies of the manufacturer's donning instructions for the harness in use

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Effective Communication at Work: Speaking and Writing Well in the Modern Workplace. Vicki McLeod. 2020. Emeryville, CA: Rockbridge Press.

The Elements of Style. William Strunk, Jr. 2015. Grammar, Inc.

The English Grammar Workbook for Adults: A Self-Study Guide to Improve Functional Writing. Michael DiGiacomo. 2020. Emeryville, CA: Rockbridge Press.

How to Win Friends and Influence People. Dale Carnegie. 2013. New York, NY: Simon & Schuster.

Submitting a Winning Bid: Guide to Making Construction Bidding with Examples. Gustavo Cinca. 2020.

Tools for Success: Critical Skills for the Construction Industry. NCCER. 2009. Hoboken, NJ: Pearson Education, Inc.

A number of online resources are available for trainees who would like more information on communication skills. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in workplace communication and behavior. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct or communication techniques.

Instructors are encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00108

Basic Employability Skills

Basic Employability Skills (Module 00108) provides trainees with guidance related to finding and securing a position in the construction trades. In addition, instruction in the areas of problem-solving and effective interaction with others helps to ensure their success in the construction trades.

Objectives

Learning Objective 1

Describe the opportunities in the construction businesses and how to enter the construction workforce.

a. Describe the construction business and the opportunities offered by the trades.
b. Explain how workers can enter the construction workforce.

Learning Objective 2

Explain the importance of critical thinking and how to solve problems.

a. Describe critical thinking and barriers to solving problems.
b. Describe how to solve problems using critical thinking.
c. Describe problems related to planning and scheduling.

Learning Objective 3

Explain the importance of social skills and identify ways good social skills are applied in the construction trade.

a. Identify good personal and social skills.
b. Explain how to resolve conflicts with co-workers and supervisors.
c. Explain how to give and receive constructive criticism.
d. Identify and describe various social issues of concern in the workplace.
e. Describe how to work in a team environment and how to be an effective leader.

Performance Tasks

This is a knowledge-based module. There are no Performance Tasks.

Before You Begin

As you prepare for each session, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

There are no safety considerations related to this module.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for *Core*, 6e

LCD projector and screen

Computer with Internet access

Copies of the Module Exam

Equipment and Materials for Laboratories and Performance Testing

None are required for this module.

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Knock 'em Dead Resumes: A Killer Resume Gets More Job Interviews! Martin Yate. 2014. Avon, MA: Adams Media.

Knock 'em Dead: The Ultimate Job Search Guide. Martin Yate. 2014. Avon, MA: Adams Media.

The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change. Stephen R. Covey. 2013. New York, NY: Simon & Schuster.

Starting Your Career as a Contractor: How to Build and Run a Construction Business. Claudiu Fatu. 2015. New York, NY: Skyhorse Publishing – Allworth Press.

A number of online resources are available for trainees who would like more information on employability skills and relationships within the workplace. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in both proper and improper work processes and behaviors. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct and techniques.

Instructors are also encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.

Lesson Plans for Module 00109

Introduction to Material Handling

Introduction to Material Handling (Module 00109) provides safety guidelines for workers handling materials on the job site. It covers proper procedures and techniques to use when lifting, stacking, transporting, and unloading materials. It also introduces basic motorized and non-motorized material handling equipment commonly found in the construction environment.

Objectives

Learning Objective 1

Identify the basic concepts of material handling and common safety precautions.

a. Describe the basic concepts of material handling and manual lifting.
b. Identify common material handling safety precautions.
c. Identify and describe how to tie knots commonly used in material handling.

Learning Objective 2

Identify various types of material handling equipment and describe how they are used.

a. Identify non-motorized material handling equipment and describe how they are used.
b. Identify motorized material handling equipment and describe how they are used.

Performance Tasks

Performance Task 1

(Learning Objective 1)

Demonstrate safe manual lifting techniques.

Performance Task 2

(Learning Objective 1)

Demonstrate how to tie two of the following common knots:

- Square
- Bowline
- Half hitch
- Clove hitch

Before You Begin

As you prepare for each section, allow sufficient time to review the course objectives, content, visual aids (including the *Core* PowerPoint® Presentations and/or Dynamic Study Modules), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Safety Considerations

During the course of this module, trainees may be in the vicinity of electrical energy sources and potentially hazardous tools, equipment, and materials. In those instances, trainees should be carefully observed to ensure that they wear the proper PPE, follow safe practices, and give due respect to the hazards associated with the energy sources, tools, equipment, and materials.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core PowerPoint® Presentations and/or Dynamic Study Modules found in the NCCERConnect for Core, 6e

LCD projector and screen

Computer with Internet access

Copies of the Module Exam and Performance Profile Sheets

The following items are optional:

- Video resource(s) on proper lifting techniques
- A safety harness and positioning belt with lanyard
- Video resource(s) demonstrating how to tie common knots

Equipment and Materials for Laboratories and Performance Testing

Standard eye protection

Work gloves

Objects for manual lifting

Several pairs of rope sections of suitable length and equal diameter for tying knots

Common objects (rings, bars, posts, poles, etc.) around which knots can be tied

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study.

Heavy Equipment Operations. NCCER. 2020. Hoboken, NJ: Pearson Education, Inc.

Knots: The Complete Visual Guide. Des Pawson. 2012. New York, NY: DK Publishing.

Manufacturing Facilities Design & Material Handling. Matthew P. Stevens, Fred E. Meyers. 2013. West Lafayette, IN: Purdue University Press.

Materials Handling Handbook. The American Society of Mechanical Engineers (ASME) and the International Material Management Society (IMMS), Raymond A. Kulwiec, Editor-in- Chief. 1985. New York, NY: Wiley-Interscience.

Simple Solutions: Ergonomics for Construction Workers. US Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Last modified August 2014: **http://www.cdc.gov/niosh/docs/2007-122/**.

There are a number of online resources available for trainees who would like more information on safety practices, guidelines, and requirements related to material handling and material handling equipment. A search for additional information may be assigned as homework to interested trainees.

Instructors should view any videos that may be identified in the lesson plan before using them to ensure their suitability. The videos can provide teachable moments in both proper and improper work processes and behaviors. Be prepared to stop the videos at appropriate times to point out and discuss both proper and improper conduct and techniques.

Videos focusing on proper lifting techniques are available from the following:

National Safety Compliance, Inc. (**www.nationalsafetycompliance.com**)

Safety Video Direct (**www.safetyvideodirect.com**)

Suggested online sources for videos and still images related to knot tying are available from the following:

I Will Knot! (**www.iwillknot.com**)

Instructors are encouraged to review these resources and incorporate any that they choose into the classroom presentations.

Instructors are also encouraged to locate additional audiovisual aids available on the Internet, make personal videos, and take still pictures related to the subject matter and add them to the PowerPoint® presentations throughout the program.