Lesson Plans for Module 00101-15

Basic Safety (Construction Site Safety Orientation)

Module One (00101-15) 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

- Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control.
  a. Define incidents and the significant costs associated with them.
  b. Identify the common causes of incidents and their related consequences.
  c. Describe the processes related to hazard recognition and control, including the Hazard Communication (HAZCOM) Standard and the provisions of a Safety Data Sheet (SDS).

Learning Objective 2

- Describe the safe work requirements for elevated work, including fall protection guidelines.
  a. Identify and describe various fall hazards.
  b. Identify and describe equipment and methods used in fall prevention and fall arrest.
  c. Identify and describe the safe use of ladders and stairs.
  d. Identify and describe the safe use of scaffolds.

Learning Objective 3

- Identify and explain how to avoid struck-by and caught-in-between hazards.
  a. Identify and explain how to avoid struck-by and caught-in-between hazards.
  b. Identify and explain how to avoid caught-in and caught-between hazards.

Learning Objective 4

- Identify common energy-related hazards and explain how to avoid them.
  a. Describe basic job-site electrical safety guidelines.
  b. Explain the importance of lockout/tagout and describe basic procedures.

Learning Objective 5

- Identify and describe the proper use of personal protective equipment (PPE).
  a. Identify and describe the basic use of PPE used to protect workers from bodily injury.
  b. Identify potential respiratory hazards and the basic respirators used to protect workers against those hazards.

Learning Objective 6

- Identify and describe other specific job-site safety hazards.
  a. Identify various exposure hazards commonly found on job sites.
  b. Identify hazards associated with environmental extremes.
  c. Identify hazards associated with hot work.
  d. Identify fire hazards and describe basic firefighting procedures.
  e. Identify confined spaces and describe the related safety considerations.

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 Objective 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, and connecting devices
  – Approved footwear

Performance Task 3 (Learning Objective 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.

Teaching Time: 12.5 Hours

(Five 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

None

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

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 Curriculum PowerPoint® Presentations

TV/DVD player

LCD projector and screen

Computer with internet access

Copies of the Module Examination and Performance Profile Sheets

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 or MSDS

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.

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

Construction Safety, Jimmie W. Hinze. 2006. Upper Saddle River, NJ: Pearson Education, Inc.

DeWalt Construction Safety/OSHA Professional Reference, Paul Rosenberg; American Contractors Educational Services. 2006. DEWALT.

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

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.

Session Outline for 00101-15

Basic Safety (Construction Site Safety Orientation)

The Lesson Plan for this module is divided into five 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One introduces trainees to basic safety concepts, identifies the causes of safety incidents, and discusses how to recognize and avoid safety hazards on the job. This section also introduces the Safety Data Sheet (SDS) and discusses its importance in managing hazards related to chemicals used on the job.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to get trainees engaged and give them an idea of what they will learn from this module.
3. Review the categories and causes of safety incidents.
4. Describe hazard recognition and reporting requirements.
5. Explain the purpose of an SDS and demonstrate how to interpret the information.

Session Two

Session Two is all about elevated work and the methods used to prevent injuries caused by falls from heights. Included are discussions of fall hazards; fall arrest equipment and methods; types of ladders and the safe use of ladders; and types of scaffolds and their safe uses.

1. Show the Session Two PowerPoint® presentation.
2. Review the types of fall hazards and the protections required for unprotected sides, wall openings, and floor openings.
3. Describe the various equipment used to prevent or arrest falls.
4. Demonstrate how to inspect a safety harness, lanyard, and connecting devices.
5. Describe the different types of ladders and their uses and limitations.
6. Explain how to properly set up and climb a ladder using three-point contact.
7. Describe the different types of scaffolds used on job sites and explain how to inspect and safely use scaffolds.
8. Trainees practice or complete a portion of the requirements for Performance Tasks 2 and 3.

Session Three

Session Three deals with the sections of the module covering struck-by/caught-in between hazards, as well as hazards related to unplanned energy release. The session includes coverage of vehicle hazards, trench safety, and electrical safety. Trainees will inspect a power cord and a GFCI to satisfy a Performance Task.

1. Show the Session Three PowerPoint® presentation.
2. Explain struck-by hazards, including flying and falling objects.
3. Describe the various caught-in/caught between hazards associated with tools, rotating equipment, and moving equipment.
4. Explain the hazards related to working in excavations and trenches and discuss methods used to protect workers in these situations.
5. Discuss the various ways in which workers can be injured by unwanted release of energy.
6. Explain the methods used to protect against electrical shock.
7. Describe the lockout-tagout devices and the rules that apply to the use of these devices for electrical and other types of hazards.
8. Demonstrate how to properly inspect a power cord and a GFCI to ensure their serviceability.
9. Trainees practice or complete the requirements for Performance Task 4.

Session Four

Session Four covers PPE and a variety of job site hazards.

1. Show the Session Four PowerPoint® presentation.
2. Show the trainees the various items of PPE used on a job site and explain the purpose of each item.
3. Demonstrate how to properly inspect and use each item of PPE and have the trainees practice these skills to satisfy the related Performance Tasks.
4. Describe the respiratory hazards encountered by workers, including dust, chemicals, toxic odors, and oxygen deficiency.
5. Explain the different types of respirators, along with the uses and limitations of each type.
6. Describe the job site hazards created by exposure to toxic materials such as lead, asbestos, and chemical splashes.
7. Explain how extreme heat or cold can create hazards, and discuss the methods for mitigating these hazards.
8. Describe hot work hazards related to welding and thermal cutting and explain how to avoid these hazards.
9. Describe the causes of fires and explain the methods used to prevent and fight fires.
10. Explain the hazards associated with confined spaces, how to recognize a confined space, and rules associated with entering and working in confined spaces.
11. Trainees practice or complete the balance of the requirements for Performance Tasks 2 and 3.

Session Five

Session Five is a review and testing session. In addition, this session is used for the practice and completion of Performance Task 1.

Have trainees complete the Module Review and Trade Terms Quiz. Alternatively, these may be assigned as homework at the end of Session Four. Go over the Module Review in class prior to the exam and answer any questions that the trainees may have.

1. Demonstrate how to properly and safely set up an extension ladder. Show trainees how to properly climb and descend the ladder by maintaining three-point contact at all times.
2. Trainees practice and complete the requirements of Performance Task 1.
3. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
4. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00101-15, Basic Safety (Construction Site Safety Orientation)

Equipment and Materials					
Personal protective equipment:		Ground fault circuit interrupter (GFCI)		Provide both defective and serviceable examples of the following items:	
Eye protection					
Work gloves		Task safety analysis (TSA) example documents		Eye protection, such as safety glasses and face shields	
High-top safety shoes					
Hearing protection		Job safety analysis (JSA) example documents		Hearing protection, including ear plugs and ear muffs	
Hard hat					
Whiteboard/chalkboard		Carabiners		Hard hats	
Markers/chalk		Double-locking snap hooks		Work gloves	
Pencils and paper		Examples of SDS or MSDS		High-top safety shoes	
Core Curriculum PowerPoint® Presentation Slides		Fall arrest harnesses in various sizes			
LCD projector and screen		Extension ladder			
DVD player		Lanyards			
Computer with internet access		Various types of respirators			
Copies of the Module Examination and Performance Profile Sheets		Damaged and undamaged extension cords			
		Double-insulated power tool			

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

Lesson Plans for Module 00102-15

Introduction to Construction Math

Module Two (00102-15) 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 Imperial 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 demonstrate how to work with them mathematically.
  a. Identify different whole numbers and their place values.
  b. Demonstrate the ability to add and subtract whole numbers.
  c. Demonstrate the ability to multiply and divide whole numbers.

Learning Objective 2

- Explain how to work with fractions.
  a. Define equivalent fractions and show how to find lowest common denominators.
  b. Describe improper fractions and demonstrate how to change an improper fraction to a mixed number.
  c. Demonstrate the ability to add and subtract fractions.
  d. Demonstrate the ability to multiply and divide fractions.

Learning Objective 3

- Describe the decimal system and explain how to work with decimals.
  a. Describe decimals and their place values.
  b. Demonstrate the ability to add, subtract, multiply, and divide decimals.
  c. Demonstrate the ability to convert between decimals, fractions, and percentages.

Learning Objective 4

- Identify various tools used to measure length and show how they are used.
  a. Identify and demonstrate how to use rulers.
  b. Identify and demonstrate how to use measuring tapes.

Learning Objective 5

- Identify and convert units of length, weight, volume, and temperature between the imperial and metric systems of measurement.
  a. Identify and convert units of length measurement between the imperial and metric systems.
  b. Identify and convert units of weight measurement between the imperial and metric systems.
  c. Identify and convert units of volume measurement between the imperial and metric systems.
  d. Identify and convert units of temperature measurement between the imperial and metric systems.

Learning Objective 6

- Identify basic angles and geometric shapes and explain how to calculate their area and volume.
  a. Identify various types of angles.
  b. Identify basic geometric shapes and their characteristics.
  c. Demonstrate the ability to calculate the area of two-dimensional shapes.
  d. Demonstrate the ability to calculate the volume of three-dimensional shapes.

Performance Tasks

This is a knowledge-based module; there are no performance tasks.

Teaching Time: 10 hours

(Four 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Module 00101-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

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 Curriculum PowerPoint® Presentations
DVD player
LCD projector and screen
Computer
Internet access during class (*optional*)
Copies of the Module Examination

Equipment and Materials for Laboratories and Performance Testing

Calculators
Rulers
Tape measures

Additional Resources

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

Applied Construction Math: A Novel Approach. NCCER. 2006. Upper Saddle River, NJ: Prentice Hall.

Mathematics for Carpentry and the Construction Trades. Alfred P. Webster; Kathryn B. Judy. 2001. Upper Saddle River, NJ: Prentice Hall.

Mathematics for the Trades: A Guided Approach. Robert A. Carman Emeritus; Hal M. Saunders. 2014. Pearson Learning.

Metric-conversion.org : Metric Conversion Charts and Calculators.

There are a number of on-line resources available for trainees who would like more information on trade-related math skills. The instructor's package for this module comes with a companion workbook offering additional math problems that can be provided to trainees needing additional practice.

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.

Session Outline for 00102-15

Introduction to Construction Math

The Lesson Plan for this module is divided into four 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One reviews basic numbers and the four primary mathematical operations of addition, subtraction, multiplication, and division. These four operations are also applied to fractions.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to stimulate interest in math.
3. Identify whole numbers and place values.
4. Apply the four primary operations to whole numbers.
5. Introduce fractions and mixed numbers.
6. Apply the four primary operations to fractions.

Session Two

Session Two Introduces mixed numbers in the form of decimals. The four operations are applied to decimal numbers, along with the conversion of fractions, decimals, and percentages. The session concludes with instruction on measuring with and reading with rulers and tape measures.

1. Show the Session Two PowerPoint® presentation.
2. Introduce decimal numbers and expand on place values.
3. Apply the four operations to decimal numbers.
4. Show trainees how to convert fractions, decimals, and percentages.
5. Introduce rulers and tape measures and have trainees practice reading and taking measurements.

Session Three

Session Three presents Imperial and metric units of measurement for length, weight, volume, and temperature. In addition, basic geometry is introduced.

1. Show the Session Three PowerPoint® presentation.
2. Introduce the most common units of measure in the imperial and metric systems.
3. Demonstrate how unit conversions are made, both within and between the two systems.
4. Introduce basic geometric shapes and their characteristics.
5. Demonstrate how to calculate are and volume for various shapes.

Session Four

Session Four is a review and testing session. Have trainees complete the Module Review and Trade Terms Quiz. Alternatively, the Module Review and Trade Terms Quiz may be assigned as homework. Go over the Module Review and Trade Terms Quiz in class prior to the exam and answer any questions that the trainees may have.

1. Have trainees complete the written examination.
2. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00102-15, Introduction to Construction Math

Equipment and Materials					
Personal protective equipment:		Calculators			
None		Rulers			
Whiteboard/chalkboard		Tape measures			
Markers/chalk					
Pencils and paper					
Core Curriculum PowerPoint® Presentation Slides					
DVD player					
LCD projector and screen					
Computer					
Internet access during class (*optional*)					
Copies of the Module Examination					

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

Lesson Plans for Module 00103-15

Introduction to Hand Tools

Module Three (00103-15) 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

- Identify and explain how to use various types of hand tools.
  a. Identify and explain how to use various types of hammers and demolition tools.
  b. Identify and explain how to use various types of chisels and punches.
  c. Identify and explain how to use various types of screwdrivers.
  d. Identify and explain how to use various types of non-adjustable and adjustable wrenches.
  e. Identify and explain how to use various types of socket and torque wrenches.
  f. Identify and explain how to use various types of pliers and wire cutters.

Learning Objective 2

- Identify and describe how to use various types of measurement and layout tools.
  a. Identify and explain how to use rules and other measuring tools.
  b. Identify and explain how to use various types of levels and layout tools.

Learning Objective 3

- Identify and explain how to use various types of cutting and shaping tools.
  a. Identify and explain how to use handsaws.
  b. Identify and explain how to use various types of files and utility knives.

Learning Objective 4

- Identify and explain how to use other common hand tools.
  a. Identify and explain how to use shovels and picks.
  b. Identify and explain how to use chain falls and come-alongs.
  c. Identify and explain how to use various types of clamps.

Performance Tasks

Performance Task 1

(Learning Objectives 1 through 4)

- Visually inspect a minimum of five of the following tools to determine if they are safe to use:
  - Hammer or demolition tool
  - Chisel or punch
  - Screwdriver
  - Adjustable or non-adjustable wrench
  - Socket
  - Torque wrench
  - Pliers
  - Wire cutters
  - Measuring tool
  - Layout tool
  - Level
  - Hand saw
  - File
  - Utility knife
  - Shovel or other earth tool
  - Chain fall or hoist
  - Clamps

Performance Task 2

(Learning Objectives 1 through 4)

- Safely and properly use a minimum of three of the following tools:
  - Hammer or demolition tool
  - Chisel or punch
  - Screwdriver
  - Adjustable or non-adjustable wrench
  - Socket
  - Torque wrench
  - Pliers
  - Wire cutters
  - Measuring tool
  - Layout tool
  - Level
  - File
  - Utility knife
  - Shovel or other earth tool
  - Chain fall or hoist
  - Clamps

Performance Task 3

(Learning Objectives 1 through 4)

- Make a straight, square cut in framing lumber using a crosscut saw.

Teaching Time: 10 hours

(Four 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Modules 00101-15 and 00102-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

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 Curriculum* PowerPoint® Presentations
- DVD player
- LCD projector and screen
- Computer
- Internet access during class (*optional*)
- Copies of the Module Examination and 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
- Pliers and wire cutters
- Measuring tapes and rules
- Levels
- Squares
- Plumb bobs
- Chalk lines
- Hand saws
- Files and rasps
- Utility knives
- Shovels, picks, and related earth-working tools
- Chain fall
- Ratcheting chain hoist
- Come-along
- 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
- Hammers or demolition tools
- Chisels or punches
- Screwdrivers
- Adjustable or non-adjustable wrenches
- Socket sets
- Torque wrenches
- Pliers
- Wire cutters
- Measuring tools
- Layout tools
- Levels
- Hand saws
- Files
- Utility knives
- 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
- Appropriate load for vertical lifting

Additional Resources and References

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

Easy Ergonomics: A Guide to Selecting Non-Powered Hand Tools. National Institute for Occupational Safety and Health (NIOSH), DHHS Publication No. 2004-164. **www.cdc.gov**

Field Guide to Tools. John Kelsey. 2004. Philadelphia, PA: Quirk Books.

There are a number of on-line 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.

Session Outline for 00103-15

Introduction to Hand Tools

The Lesson Plan for this module is divided into four 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One discusses the various types, uses, safety, and maintenance of various hand tools covered by Objectives 1 and 2.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to generate curiosity in the trainees.
3. Identify and explain how to use the various types of hand tools presented in this session.
4. Discuss safety considerations for all hand tools as the session progresses.
5. Describe the maintenance requirements for hand tools.

Session Two

Session Two identifies and explains how to use cutting and shaping tools, as well as other common hand tools.

1. Show the Session Two PowerPoint® presentation.
2. Identify and explain how to safely use measuring and layout tools.
3. Identify and explain how to safely use tools such as shovels and picks.
4. Identify and explain the differences between come-alongs and ratcheting chain hoists.
5. Present the many types of clamps and explain how they are used.

Session Three

Session Three is a laboratory session devoted to the practice and completion of Performance Tasks 1 through 3.

1. Note that there is no PowerPoint® presentation associated with this session.
2. Have individual trainees inspect various hand tools and report their findings.
3. Demonstrate how to safely and properly use at least three instructor-chosen tools.
4. Trainees practice using various hand tools.
5. Demonstrate how to properly use a crosscut saw to make a square cut.
6. Trainees practice sawing.
7. Trainees should complete the tasks associated with Performance Tasks 1 through 3 in this hands-on session.

Session Four

Session Four is a review and testing session. Have trainees complete the Module Review and Trade Terms Quiz. Alternatively, the Module Review and Trade Terms Quiz may be assigned as homework. Go over the Module Review and Trade Terms Quiz in class prior to the exam and answer any questions that the trainees may have.

1. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
2. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00103-15, Introduction to Hand Tools

Equipment and Materials					
Personal protective equipment:		Old and/or unusual hand tools		Files and rasps	
Safety glasses		Hammers and demolition tools		Utility knives	
Work gloves		Chisels and punches		Chain fall	
Whiteboard/chalkboard		Different types of screwdrivers		Ratcheting chain hoist	
Markers/chalk		Levels		Chisels or punches	
Pencils and paper		Squares		Screwdrivers	
Core Curriculum PowerPoint® Presentation Slides		Shovels, picks, and related earth-working tools		Pliers and wire cutters Measuring tapes and rules	
DVD player		Plumb bobs		Come-along	
LCD projector and screen		Chalk lines		Various types of clamps	
Computer		Hand saws		Hammers or demolition tools	
Internet access during class (*optional*)		Non-adjustable and adjustable wrenches		Socket sets and torque wrenches	
Copies of the Module Examination and Performance Profile sheets		Proper footwear as designated by the instructor or training facility provider		Hard hats as required by the instructor, training, provider, or the environment	
		Adjustable or non-adjustable wrenches		Appropriate load for vertical lifting	
		Socket sets		Torque wrenches	
		Pliers		Wire cutters	
		Measuring tools		Layout tools	
		Files		Utility knives	
		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		Hand saws	
		Levels			

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

Lesson Plans for Module 00104-15

Introduction to Power Tools

Module Four (00104-15) 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. **NOTE:** Trainees are required to successfully complete Module 00101-15, *Basic Safety (Construction Site Safety Orientation)* before studying this module.

Objectives

Learning Objective 1

- Identify and explain how to use various types of power drills and impact wrenches.
  a. Identify and explain how to use common power drills and bits.
  b. Identify and explain how to use a hammer drill.
  c. Identify and explain how to use pneumatic drills and impact wrenches.

Learning Objective 2

- Identify and explain how to use various types of power saws.
  a. Identify and explain how to use a circular saw.
  b. Identify and explain how to use saber and reciprocating saws.
  c. Identify and explain how to use a portable band saw.
  d. Identify and explain how to use miter and cutoff saws.

Learning Objective 3

- Identify and explain how to use various grinders and grinder attachments.
  a. Identify and explain how to use various types of grinders.
  b. Identify and explain how to use various grinder accessories and attachments.

Learning Objective 4

- Identify and explain how to use miscellaneous power tools.
  a. Identify and explain how to use pneumatic and powder-actuated fastening tools.
  b. Identify and explain how to use pavement breakers.
  c. Identify and explain the uses of hydraulic jacks.

Performance Tasks

Performance Task 1

(Learning Objectives 1 through 4)

- Safely and properly demonstrate the use of three of the following tools:
  – Electric drill
  – Hammer drill or rotary hammer
  – Circular saw
  – Reciprocating saw
  – Portable band saw
  – Miter or cutoff saw
  – Portable or bench grinder
  – Pneumatic nail gun
  – Pavement breaker

Teaching Time: 10 hours

(Four 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Modules 00101-15; 00102-15; and 00103-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

Safety Considerations

This module requires that trainees handle and demonstrate the proper use of various power tools. Because this is likely the first module for new trainees that requires them to work with energized tools and equipment, it is essential to ensure that each trainee dons and uses the required PPE for these activities. Instructors must observe trainees carefully and consistently to ensure safety is maintained so that positive safety habits begin to form. Trainees are allowed to handle power tools—energized or non-energized—only under the direct supervision of the instructor.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core Curriculum PowerPoint® Presentations

DVD player

LCD projector and screen

Computer

Internet access during class (*optional*)

Copies of the Module Examination and 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

A minimum of three of the following power tools are required to conduct the laboratory:

- One or more types of electric drill, with suitable bits
- Hammer drill or rotary hammer, with suitable bits
- Circular saw with blade(s)
- Reciprocating saw with blade(s)
- Portable band saw with blade(s)
- Miter and/or cutoff saw with blade(s)
- Angle grinder with grinding wheel(s)
- Bench grinder
- Pneumatic nail gun
- Pavement breaker
- 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, U.S. Department of Labor, U.S. Government Printing Office.

All About Power Tools, Ortho books; Larry Johnston, ed. 2002. Des Moines, IA: Meredith Books.

Power Tool Institute, Inc. 1300 Sumner Avenue Cleveland, OH 44115-2851. **www.powertoolinstitute.com**.

There are a number of on-line 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.

Session Outline for 00104-15

Introduction to Power Tools

The Lesson Plan for this module is divided into four 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One introduces various types of power drills and several types of saws.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to demonstrate the importance of safety in the use of power tools.
3. Identify and describe various types of power drills and impact wrenches.
4. Introduce circular saws and reciprocating saws.

Session Two

Session Two presents additional saws, including band saws and miter saws. Also introduced are grinders and miscellaneous power tools.

1. Show the Session Two PowerPoint® presentation.
2. Use the Kickoff Activity to demonstrate the importance of safety in the use of grinders.
3. Identify and describe various power saws.
4. Identify and describe pneumatic nailers and powder-actuated tools.
5. Identify and describe pavement breakers and hydraulic jacks.

Session Three

Session Three is a laboratory session devoted to the practice and completion of Performance Task 1.

1. Note that there is no PowerPoint® presentation associated with this session.
2. Demonstrate how to use a minimum of three power tools.
3. Trainees practice and/or complete the tasks associated with Performance Task 1 in this hands-on session.

Session Four

Session Four is a review and testing session. Have trainees complete the Module Review and Trade Terms Quiz. Go over the Module Review and Trade Terms Quiz in class prior to the exam and answer any questions that the trainees may have.

1. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
2. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00104-15, Introduction to Power Tools

Equipment and Materials					
Personal protective equipment:		Hammer drill		A minimum of three of the following power tools are required to conduct the laboratory:	
Safety glasses		Pneumatic drill			
Face shields		Circular saw			
Work gloves		Saber saw		Pneumatic nail gun	
Safety shoes		Reciprocating saw		Circular saw with blade(s)	
Hard hats		Portable band saw		Bench grinder	
Whiteboard/chalkboard		Miter and/or cutoff saw		Pavement breaker	
Markers/chalk		Angle grinder		Portable band saw with blade(s)	
Pencils and paper		Detail grinder			
Core Curriculum PowerPoint® Presentation Slides		Grinding wheel for a bench grinder		Miter and/or cutoff saw with blade(s)	
DVD player		Bench grinder		Angle grinder with grinding wheel(s)	
LCD projector and screen		Pneumatic nail gun			
Computer		Powder-actuated fastening gun		Reciprocating saw with blade(s)	
Internet access during class (*optional*)		One or more types of power drill, with chuck key		Hammer drill or rotary hammer, with suitable bits	
Copies of the Module Examination and Performance Profile sheets		Pneumatic hose whip check Impact wrench (pneumatic or electric)		Scrap wood and metal for drilling, sawing, grinding, etc.	
		Pneumatic impact wrench		One or more types of electric drill, with suitable bits	
		Pavement breaker			
		Hydraulic jack			
		Samples of fractional, metric, numbered, lettered, and masonry drill bits			

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

Lesson Plans for Module 00105-15

Introduction to Construction Drawings

Module Five (00105-15) provides trainees with the information and skills needed to read and understand construction drawings. This module includes a set of four oversize drawings, which is included as an *Appendix* in the Trainee Guide. The drawings are also available for download from **www.nccerirc.com**.

Objective

Learning Objective 1

- Identify and describe various types of construction drawings, including their fundamental components and features.
  a. Identify various types of construction drawings.
  b. Identify and describe the purpose of the five basic construction drawing components.
  c. Identify and explain the significance of various drawing elements, such as lines of construction, symbols, and grid lines.
  d. Identify and explain the use of dimensions and various drawing scales.
  e. Identify and describe how to use engineer's and architect's scales.

Performance Task

Performance Task 1

(Learning Objective 1)

- Using the floor plan supplied with this module:
  – Locate the wall common to both interview rooms.
  – Determine the overall width of the structure studio.
  – Determine the distance from the outside east wall to the center of the beam in the structure studio.
  – Determine the elevation of the slab.

Teaching Time: 10 hours

(Four 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Modules 00101-15; 00102-15; 00103-15; and 00104-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

Safety Considerations

There are no safety considerations for this module.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core Curriculum PowerPoint® Presentations

DVD player

LCD projector and screen

Computer

Internet access during class (*optional*)

Copies of the Module Examination and 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.

Blueprint Reading for Construction, James Fatzinger. 2003. Upper Saddle River, NJ: Prentice Hall.

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

Construction Blueprint Reading. 1985. Robert Putnam. Upper Saddle River, NJ: Prentice Hall.

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

Reading Architectural Work Drawings, Edward J. Muller; Phillip A. Grau III. 2003. Upper Saddle River, NJ: Prentice Hall.

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**.

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

There are a number of on-line resources 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.

Session Outline for 00105-15

Introduction to Construction Drawings

The Lesson Plan for this module is divided into four 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One identifies and describes fundamental components and features of construction drawings.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to familiarize trainees with a complete set of construction drawings.
3. Introduce the different types of construction drawings.
4. Present and discuss the five basic components of construction drawings.

Session Two

Session Two presents drawing elements such as lines and symbols. Various measuring scales are also introduced.

1. Show the Session Two PowerPoint® presentation.
2. Emphasize the significance of drawing elements in accurately interpreting construction drawings.
3. Discuss the use of dimensions and drawing scales.
4. Explain how to use engineer's and architect's scales to measure size and distance on construction drawings.

Session Three

Session Three is a laboratory devoted to practicing the use of construction drawings and the completion of Performance Task 1.

1. Note that there is no PowerPoint® presentation associated with this session.
2. Demonstrate how to use and interpret construction drawings to locate walls and determine width, distance, and elevation of various structures.
3. Trainees practice and/or complete the tasks associated with Performance Task 1 in this hands-on session.

Session Four

Session Four is a review and testing session. Have trainees complete the Module Review and Trade Terms Quiz. Alternatively, if the Module Review and Trade Terms Quiz were assigned as homework, review the correct answers in class prior to the exam and answer any questions that the trainees may have.

1. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
2. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00105-15, Introduction to Construction Drawings

Equipment and Materials					
Personal protective equipment:		Calculators			
None		Architect's scales			
Whiteboard/chalkboard		Engineer's scales			
Markers/chalk		Drawing package supplied with the Trainee Guide module			
Pencils and paper					
Core Curriculum PowerPoint® Presentation Slides		Complete drawing package for a typical residence or similar simple structure			
DVD player					
LCD projector and screen					
Computer					
Internet access during class (*optional*)					
Copies of the Module Examination and Performance Profile sheets					

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

Lesson Plans for Module 00106-15

Introduction to Basic Rigging

Module Six (00106-15) 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 the *Core Curriculum*.

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.

Teaching Time: 7.5 hours

(Three 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Modules 00101-15; 00102-15; 00103-15; 00104-15; and 00105-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

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 Curriculum PowerPoint® Presentations

DVD player

LCD projector and screen

Computer

Internet access during class (*optional*)

Copies of the Module Examination 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. 2006. Leawood, KS: Pellow Engineering Services, Inc.

Mobile Crane Manual, Donald E. Dickie; D. H. Campbell. 1999. Toronto, Ontario, Canada: Construction Safety Association of Ontario.

Rigging Handbook, Jerry A. Klinke. 2012. Stevensville, MI: ACRA Enterprises, Inc.

Rigging Manual, 2005. Toronto, Ontario, Canada: Construction Safety Association of Ontario.

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

There are a number of on-line resources 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.

Session Outline for 00106-15

Introduction to Basic Rigging

The Lesson Plan for this module is divided into three 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One introduces slings used in rigging and the types of defects to look for during their inspection prior to each use. Common criteria used to determine if a sling is safe for use are presented.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to build interest in the topic of rigging.
3. Describe common types of synthetic, alloy steel chain, and wire rope slings.
4. Explain how to properly inspect all types of slings. Identify and discuss common defects that require each type of sling to be removed from service.

Session Two

Session Two presents common types of rigging hardware used for connecting a load to a lifting device. Various types of hoists and rigging hitches are introduced. Trainees also learn the Emergency Stop hand signal.

1. Show the Session Two PowerPoint® presentation.
2. Use the Kickoff Activity to encourage trainees to identify factors related to rigging hardware that contribute to death, injuries, and equipment damage.
3. Identify and discuss various types of shackles, eyebolts, lifting clamps, and hooks.
4. Explain how to inspect rigging hardware.
3. Identify and describe common types of hoist mechanisms.
4. Examine common hitch configurations used.
5. Demonstrate how to perform the ASME Emergency Stop hand signal.

Session Three

Session Three is a review and testing session. Have trainees complete the Module Review and Trade Terms Quiz. Go over the Module Review and Trade Terms Quiz in class prior to the exam and answer any questions that the trainees may have.

1. Trainees practice and/or complete the tasks associated with Performance Task 1.
2. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
3. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00106-15, Introduction to Basic Rigging

Equipment and Materials					
Personal protective equipment:		Damaged synthetic slings			
Safety glasses		Damaged wire rope slings			
Work gloves		Damaged alloy steel chain slings			
Whiteboard/chalkboard					
Markers/chalk		Several types of hooks, some of which are damaged			
Pencils and paper					
Core Curriculum PowerPoint® Presentation Slides		Several types of shackles, some of which are damaged			
DVD player		Several types of eyebolts, some of which are damaged			
LCD projector and screen					
Internet access during class (*optional*)		Several types of lifting clamps, some of which are damaged			
Computer					
Copies of the Module Examination and Performance Profile sheets					

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

Lesson Plans for Module 00107-15
Basic Communication Skills

Module Seven (00107-15) provides trainees with the information and skills needed to communicate effectively and clearly. Developing good communications skills enables the construction professional to become a confident, reliable asset to their craft.

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 Objectives 1 and 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.

Teaching Time: 7.5 hours

(Three 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Module 00101-15; Module 00102-15; Module 00103-15; Module 00104-15; and Module 00105-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER Registry is 70% or above for the written examination; performance testing is graded pass or fail.

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 Curriculum PowerPoint® Presentations

DVD player

LCD projector and screen

Computer

Internet access during class (*optional*)

Copies of the Module Examination and 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.

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

Listen Up: How to Improve Relationships, Reduce Stress, and Be More Productive by Using the Power of Listening, Larry Barker; Kittie Watson. 2000. New York, NY: St. Martin's Press.

Successful Writing, Maxine Hairston; Michael Keene. 2003. New York, NY: W. W. Norton & Company.

The College Writer's Reference, Alan R. Hayakawa; Toby Fulwiler. 1998. Upper Saddle River, NJ: Prentice Hall.

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

Tools for Success: Critical Skills for the Construction Industry, NCCER. 2009. Upper Saddle River, NJ: Pearson Education.

There are a number of on-line resources 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.

Session Outline for 00107-15

Basic Communication Skills

The Lesson Plan for this module is divided into three 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One describes the communication, listening, and speaking processes and their relationship to job performance. This session also includes Performance Task 1 in which trainees demonstrate their listening skills.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity for trainees to evaluate their own listening and speaking skills.
3. Review the communication process and emphasize the importance of good listening and speaking skills.
4. Discuss active listening and present good listening skills.
5. Describe effective speaking and review good speaking skills.
6. Have trainees practice and/or complete the tasks associated with Performance Task 1.

Session Two

Session Two reviews good reading and writing skills and their relationship to job performance. This session also includes Performance Task 2 in which trainees practice their writing skills.

1. Show the Session Two PowerPoint® presentation.
2. Emphasize the importance of good reading and writing skills.
3. Explain the importance of job-related reading requirements and review good reading skills.
4. Discuss job-related writing requirements and identify the good writing habits that support them.
5. Have trainees practice and/or complete the tasks associated with Performance Task 2.

Session Three

Session Three is primarily a review and testing session. Trainees will also complete the final Performance Task.

1. Note that there is no PowerPoint® presentation associated with this session.
2. Have trainees practice and/or complete the tasks associated with Performance Task 3.
3. Have trainees complete the Module Review and Trade Terms Quiz. Review the correct answers to both in class prior to the exam and answer any questions that the trainees may have.
4. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
5. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00107-15, Basic Communication Skills

Equipment and Materials					
Personal protective equipment:		Copies of Figure 3: Are You A Good Listener?			
None					
Whiteboard/chalkboard		Copies of Figure 4: Are You A Good Speaker?			
Markers/chalk					
Core Curriculum PowerPoint® Presentation Slides		One or more fall-arrest harnesses			
Pencils and paper		One or more copies of the manufacturer's donning instructions for the harness in use			
DVD player					
LCD projector and screen					
Computer		Several prepared scripts of instructions to be read by one trainee and executed by another			
Internet access in class (*optional*)					
Copies of the Module Examination and Performance Profile sheets					

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

Lesson Plans for Module 00108-15
Basic Employability Skills

Module Eight (00108-15) provides trainees with guidance related to finding and securing a position in the construction trades. In addition, guidance in the areas of problem-solving and effective interaction with others is offered to help ensure their success in the construction trades.

Objectives

Learning Objective 1

- Describe the opportunities in the construction business 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.

Teaching Time: 7.5 hours

(Three 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Modules 00101-15; 00102-15; 00103-15; 00104-15; 00105-15; and 00107-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

Safety Considerations

There are no safety considerations related to this module.

Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Core Curriculum PowerPoint® Presentation

DVD player

LCD projector and screen

Computer

Internet access during class (*optional*)

Copies of the Module Examination

Equipment and Materials for Laboratories and Performance Testing

Minor Decisions: Major Impact. How to Deal with Real Issues in Project Management, DVD. NCCER. 2009. Upper Saddle River, NJ: Pearson Education, Inc.

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, Martin Yate. 2014. Avon, MA: Adams Media.

The Re-Discovery of Common Sense – A Guide to the Lost Art of Critical Thinking, Chuck Clayton. 2007. Lincoln, NE: iUniverse, Inc.

Bullying and Harassment in the Workplace: Developments in Theory, Research, and Practice, Stale Einarsen; Helge Hoel. 2010. Boca Raton, FL: CRC Press.

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

There are a number of on-line resources 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.

Session Outline for 00108-15

Basic Employability Skills

The Lesson Plan for this module is divided into three 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One discusses opportunities in the construction business and how to enter the construction workforce.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to familiarize trainees with the topics of this module.
3. Describe the construction business and the opportunities offered by the trades.
4. Explain how workers can enter the construction workforce.
5. Describe critical thinking in problem solving and barriers to solving problems.
6. Describe how to solve problems using critical thinking.

Session Two

Session Two discusses the importance of critical thinking and how to solve problems.

1. Show the Session Two PowerPoint® presentation.
2. Describe problems related to planning and scheduling.
3. Identify good personal, social, and self-presentation skills.
4. Explain how to resolve conflicts with both co-workers and supervisors.

Session Three

Session Three discusses the importance of social skills and identifies ways good social skills are applied in the construction trade.

1. Show the Session Three PowerPoint® presentation.
2. Explain how to accept and provide constructive criticism.
3. Identify and describe various social issues in the workplace, such drug and alcohol abuse.
4. Describe how to work in a team environment and how to be an effective leader.
5. Go over the Module Review and Trade Terms Quiz in class prior to the exam and answer any questions that the trainees may have. Have trainees complete the written examination.
6. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00108-15, Basic Employability Skills

Equipment and Materials					
Personal protective equipment:		*Minor Decisions: Major Impact. How to Deal with Real Issues in Project Management*, DVD. NCCER. 2009. Upper Saddle River, NJ: Pearson Education, Inc.			
None					
Whiteboard/chalkboard					
Markers/chalk					
Pencils and paper					
Core Curriculum PowerPoint® Presentation Slides					
DVD player					
Computer					
Copies of the Module Examination					

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

Lesson Plans for Module 00109-15
Introduction to Material Handling

Module Nine (00109-15) 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

- Describe 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

Teaching Time: 5 hours

(Two 2.5-Hour Classroom Sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

Core Curriculum Modules 00101-15 through 00105-15; 00107-15; and 00108-15.

Before You Begin

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

Using your access code, download the written examinations and performance profile sheets from **www.nccerirc.com**. The passing score for submission into NCCER's Registry is 70% or above for the written examination; performance testing is graded pass or fail.

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 Curriculum PowerPoint® Presentations

DVD player

LCD projector and screen

Computer

Internet access during class (*optional*)

Copies of the Module Examination 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

Appropriate PPE:

- 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.

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.

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

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

Simple Solutions Ergonomics for Construction Workers. US Centers for Disease Control, National Institute for Occupational Safety and Health. Last modified August 2007. **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 National Safety Compliance, Inc. (**www.nationalsafetycompliance.com**), Wimbus Corporation (**www.wumbus.com**), and Safety Video Direct (**www.safetyvideodirect.com**). Suggested online sources for videos and still images related to knot tying are: 20-20 Site (**www.2020site.org/knots**), and 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.

Session Outline for 00109-15

Introduction to Material Handling

The Lesson Plan for this module is divided into two 2.5-hour sessions.
This time includes 10 minutes for administrative tasks and a 10-minute break per session.

Session One

Session One discusses basic material handling concepts and safety precautions. It reviews various types of motorized and non-motorized material handling equipment and describes how the equipment is used.

1. Show the Session One PowerPoint® presentation.
2. Use the Kickoff Activity to introduce the subjects that will be covered in this module and stimulate trainee interest in the topic.
3. Discuss the basics of performing pre-task planning, using PPE, and following proper procedures for lifting and lowering materials.
4. Describe safety guidelines that apply to stacking and storing materials, and working from heights.
5. Explain when to use and how to tie a square knot, a bowline, a half hitch, and a clove hitch.
6. Describe the basic features and use of non-motorized material-handling equipment.
7. Describe the basic features and use of motorized material-handling equipment.
8. Introduce hand signals that are commonly used to communicate with forklift operators.

Session Two

Session Two begins with a laboratory devoted to practice and completion of Performance Tasks 1 and 2. The laboratory is followed by a comprehensive module review and written examination.

1. Note that there is no PowerPoint® presentation associated with this session.
2. Have trainees practice and/or complete the tasks associated with Performance Tasks 1 and 2.
3. Have trainees complete the Module Review and Trade Terms Quiz. Review the correct answers to both in class prior to the exam and answer any questions that the trainees may have.
4. Have trainees complete the written examination. Any outstanding performance testing must be completed during this session as well.
5. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 00109-15, Introduction to Material Handling

Equipment and Materials					
Personal protective equipment:		Objects for manual lifting			
Standard eye protection		Several pairs of rope sections of suitable length and equal diameter for tying knots			
Work gloves					
Whiteboard/chalkboard		Common objects (rings, bars, posts, poles, etc.) around which knots can be tied			
Markers/chalk					
Pencils and paper					
Core Curriculum PowerPoint® Presentation Slides					
DVD player					
LCD projector and screen					
Computer					
Internet access during class (*optional*)					
Copies of the Module Examination 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					

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