

Module Overview

This module introduces trainees to the function of substations at all levels of the power grid, with an introduction to typical substation components included. Substation safety issues are reviewed, and trainees are introduced to one-line diagrams used in the power industry.

Objectives

Upon completion of this module, the trainee will be able to do the following:

1. Describe the functions performed by various substations.
2. Identify the voltage classes that exist in substations.
3. Identify the following medium- and high-voltage equipment:
 - Buses
 - Disconnect switches
 - Oil circuit breakers
 - Gas circuit breakers
 - Vacuum circuit breakers
 - Power transformers
 - Instrument transformers
 - Capacitors
 - Reactors
4. Interpret a one-line substation diagram.
5. Describe the safe work practices used in substations, including clearance zones and lockout/tagout requirements.

Performance Task

Under the supervision of the instructor, the trainee should be able to do the following:

1. Interpret a one-line substation diagram.

Materials and Equipment

Multimedia projector and screen
Power Line Worker Level Three: Distribution
PowerPoint® Presentation Slides
(ISBN 978-0-13-294912-5)
Computer
Whiteboard/chalkboard
Markers/chalk

Pencils and paper
One-line electrical diagram for a substation with
an appropriate legend
Hook switch disconnect (optional)
Module Examinations*
Performance Profile Sheets*

* Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Safety Considerations

Ensure that the trainees are equipped with any appropriate PPE and know how to use it properly. Emphasize the importance of proper housekeeping.

Additional Resources

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

Electric Power Equipment Maintenance and Testing, 2nd Edition. Paul Gill. Boca Raton, FL: CRC Press.

Electric Power Substation Engineering, 2nd Edition. John McDonald, ed. Boca Raton, FL: CRC Press.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 10 hours are suggested to cover *Introduction to Substations*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

Topic	Planned Time
Session I. Introduction; Substation Applications; Substation Equipment, Part One	
A. Introduction	_____
B. Substation Applications	_____
1. Transmission Substations	_____
2. Distribution Substations	_____
3. Collector Substations	_____
4. HVDC Substations	_____
C. Substation Equipment	_____
1. Buses	_____
2. Disconnect Switches	_____
3. Circuit Breakers	_____
4. Power Transformers	_____
Session II. Substation Equipment, Part Two	
A. Substation Equipment	_____
1. Instrument Transformers	_____
2. Capacitors	_____
3. Reactors	_____
B. Substation Single-Line Diagrams	_____
1. Collector Substation	_____
2. Distribution Substation	_____
C. PT/Laboratory	_____
Have trainees examine a single-line substation drawing with a matching legend. Ask them to interpret the symbols, letters, and numbers associated with components on the drawing and document the information gathered on a separate sheet of paper. This laboratory corresponds to Performance Task 1.	

Session III. Substation Safety

A. Substation Safety

1. Substation Access
2. Minimum Approach Distance
3. Clearance Zones and Isolation Guarantees
4. Temporary Protective Grounds
5. Construction and Maintenance Equipment
6. Switching

Session IV. Review and Testing

A. Review

B. Module Examination

1. Trainees must score 70% or higher to receive recognition from NCCER.
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.

C. Performance Testing

1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.

Module Overview

In this module, trainees will learn how to work on energized power distribution lines using insulated tools and equipment specifically designed for the live-line work. The focus of this module is on the safety aspects of live-line work.

Objectives

Upon completion of this module, the trainee will be able to do the following:

1. Identify tools and accessories used in live-line work.
2. Identify safety practices associated with live-line work.
3. Describe the procedures for performing live-line tasks:
 - Moving energized conductors
 - Replacing components
 - Installing and removing crossarms

Performance Tasks

Under the supervision of the instructor, the trainee should be able to do the following:

1. Replace and energize an in-line disconnect switch.
2. Replace a three-phase pole.
3. Move energized conductors onto layout arms.

Materials and Equipment

Multimedia projector/screen

Power Line Worker Level Three:

Distribution

PowerPoint®

Presentation Slides

(ISBN 978-0-13-294912-5)

Computer

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Personal protective equipment

including:

Rubber gloves

Leather outergloves

Insulating sleeves

Electrical Class E hard hats

Nonconductive footwear

Dielectric footwear

Selection of hot sticks,
including:

Standard hot sticks

Shotgun sticks

Telescoping stick

Hot stick attachments,
including:

Socket wrench drive

Universal head

Voltage tester

Wire brush

Conductor gauge

Insulator placement tool

High-current ammeter

Wire tongs

Pole saddles

Wire tong swivel

Extension arm

Auxiliary arm

Live-line rope

Rope snubbing bracket

Line covers

Insulating blankets

Crossarm covers

Rope block

Bucket truck

Digger derrick

Hydraulic pole puller

Hot-line jumper

Stirrup clamp

Disconnect switch

Utility pole

Module Examinations*

Performance Profile Sheets*

* Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Safety Considerations

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. Review safety guidelines associated with working on or around live power lines. Emphasize the importance of proper housekeeping.

Additional Resources

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

OSHA Publication 3071, Job Hazard Analysis Guide.

Live-Line Work Practices, Second Edition. Alexander Publications.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 40 hours are suggested to cover *Live-Line Work*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

Topic	Planned Time
Sessions I and II. Introduction; Live-Line Tools and Equipment	
A. Introduction	_____
B. Live-Line Tools and Equipment	_____
1. Tool Safety Requirements	_____
2. Hot Sticks	_____
3. Laboratory	_____
Have trainees inspect and clean hot sticks and accessories.	
4. Wire Tongs	_____
5. Protective Insulators	_____
6. Live-Line Rope	_____
7. Conductor Pulling Tools	_____
Session III. Live-Line Safety	
A. Live-Line Safety	_____
1. Job Safety Analysis	_____
2. Minimum Approach Distances	_____
3. Live-Line PPE	_____
4. Reclosers	_____
5. Other Safety Considerations	_____
6. Live-Line Safety Review	_____

Sessions IV-VII. Live-Line Tasks, Part One

A. Live-Line Tasks

1. General Considerations
2. Moving Energized Conductors

B. PT/Laboratory

Have trainees practice moving energized conductors onto layout arms. This laboratory corresponds to Performance Task 3.

Sessions VIII-XV. Live-Line Tasks, Part Two

A. Line-Line Tasks

1. Pole and Component Work

B. PT/Laboratory

1. Have trainees practice replacing and energizing an in-line disconnect switch. This laboratory corresponds to Performance Task 1.
2. Have trainees practice replacing a three-phase pole. This laboratory corresponds to Performance Task 2.

Session XVI. Review and Testing

A. Review

B. Module Examination

1. Trainees must score 70% or higher to receive recognition from NCCER.
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.

C. Performance Testing

1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.

Module Overview

This module describes the safety practices, equipment, installation practices, and cabling requirements for three-phase underground systems.

Objectives

Upon completion of this module, the trainee will be able to do the following:

1. Identify safety practices associated with three-phase underground residential distribution (URD) systems:
 - Confined space procedures
 - Personal protective equipment (PPE)
 - Hotline tools
2. Describe vault and manhole applications in URD systems.
3. Interpret a transformer name/specification plate.
4. Describe the use of sectionalizing cabinets/modules.
5. Describe phasing identification procedures.
6. Describe procedures for pulling cable through conduit.

Performance Tasks

Under the supervision of the instructor, the trainee should be able to do the following:

1. Isolate and ground a section of cable.
2. Pull cable through conduit.

Materials and Equipment

Multimedia projector and screen
Power Line Worker Level Three: Distribution
PowerPoint® Presentation Slides
(ISBN 978-0-13-294912-5)
Computer
Whiteboard/chalkboard
Markers/chalk
Pencils and scratch paper
Appropriate personal protective equipment
Atmospheric testers
PVC conduit
URD cable

Cable lubricant
Kellems grip
Pulling line
Cable pulling equipment
Primary cable locator
Cable spike
Confined space barriers
Rescue equipment
Ventilation equipment
Module Examinations*
Performance Profile Sheets*

* Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Safety Considerations

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. Review safety guidelines associated with working on or around power lines. Emphasize the importance of proper housekeeping.

Additional Resources

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

Electric Power Distribution Handbook. T. A. Short. Boca Raton, Florida: CRC Press LLC.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 25 hours are suggested to cover *Three-Phase URD Systems*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

Topic	Planned Time
Sessions I–III. Introduction; Safety Practices; URD Vaults and Manhole Applications	
A. Introduction	_____
B. Safety Practices	_____
1. Enclosed and Confined Spaces	_____
2. Laboratory	_____
Have trainees test and assess a confined space, and set up a confined space with barriers, rescue equipment, and ventilation.	
3. Trench Safety	_____
4. Personal Protective Equipment	_____
5. Hotline Tools	_____
C. URD Vaults and Manhole Applications	_____
1. Vaults	_____
2. Manholes	_____
Session IV. Transformers and Sectionalizing Devices	
A. Transformers and Sectionalizing Devices	_____
1. Transformer Types	_____
2. Transformer Nameplate Interpretation	_____
3. Transformer Configurations	_____
4. Sectionalizing Devices	_____
Sessions V–IX. Cable Identification and Installation	
A. Cable Identification and Installation	
1. Cable Types	_____
2. Phase Identification	_____
3. Pulling Cable Through Conduit	_____
B. PT/Laboratory	
1. Have trainees practice isolating and grounding a section of cable. This laboratory corresponds to Performance Task 1.	_____
2. Have trainees practice pulling cable through conduit. This laboratory corresponds to Performance Task 2.	_____

Session X. Review and Testing

A. Review

B. Module Examination

1. Trainees must score 70% or higher to receive recognition from NCCER.
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.

C. Performance Testing

1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.

Module Overview

This module presents information on how protective devices are coordinated to minimize the effect on the distribution system in the event of a power outage.

Objectives

Upon completion of this module, the trainee will be able to do the following:

1. State the functions of system protection and coordination.
2. Identify the types of components used in system protection, and describe their functions.
3. Identify the correct protective device for a given application.

Performance Tasks

Under the supervision of the instructor, the trainee should be able to do the following:

1. Locate specified protection components on a feeder diagram.
2. Identify the correct protective device for a given application.

Materials and Equipment

Multimedia projector and screen
Power Line Worker Level Three: Distribution
PowerPoint® Presentation Slides
(ISBN 978-0-13-294912-5)
Computer
Whiteboard/chalkboard
Markers/chalk

Pencils and paper
Appropriate personal protective equipment
Fused cutout
Feeder diagrams from utilities
Module Examinations*
Performance Profile Sheets*

* Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Safety Considerations

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. Emphasize the importance of proper housekeeping.

Additional Resources

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

Protective Relaying: Principles and Applications, Third Edition. J. Lewis Blackburn and Thomas J. Domin. Boca Raton, FL: CRC Press.

Power System Protection. Paul M. Anderson. Hoboken, NJ: Wiley-IEEE Press.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 7½ hours are suggested to cover *System Protection and Monitoring*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

Topic	Planned Time
Session I. Introduction; System Monitoring; System Protection	
A. Introduction	_____
B. System Monitoring	_____
1. Instrument Transformers	_____
2. Fault Indicators	_____
3. Protective Relays	_____
4. Transformer Dielectric Protection	_____
D. System Protection	_____
1. Fuses	_____
2. Circuit Breakers	_____
3. Reclosers	_____
4. Sectionalizers	_____
Session II. Protective Device Coordination; Basic Feeder Diagrams	
A. Protective Device Coordination	_____
1. Coordinating Points of a Distribution Feeder	_____
2. Cold-Load Pickup	_____
3. Applying Protective Device Coordination	_____
B. Basic Feeder Diagrams	_____
1. Feeder Designs	_____
2. Feeder Drawings	_____
Session III. PT/Laboratory; Review and Testing	
A. PT/Laboratory	
1. Have trainees practice locating specified protection components on a feeder diagram. This task corresponds to Performance Task 1.	_____
2. Have trainees practice identifying the correct protective device for a given application. This task corresponds to Performance Task 2.	_____
B. Review	_____
C. Module Examination	_____
1. Trainees must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.	
D. Performance Testing	_____
1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.	
2. Record the testing results on Craft Training Report Form 200 and submit the results to the Training Program Sponsor.	

Module Overview

This module introduces basic troubleshooting procedures for aerial and URD distribution systems that line workers would follow in responding to a power outage. It covers safety considerations, basic troubleshooting approach, and work site preparation.

Objectives

Upon completion of this module, the trainee will be able to do the following:

1. Describe safety practices applicable to troubleshooting.
2. Describe basic troubleshooting practices for aerial and URD systems, including the use of emergency secondary transformers (ESTs).
3. Describe the procedures for isolating primary faults with the use of fault indicators.
4. Describe the methods used to locate and isolate faults in primary and secondary buried cable.

Performance Task

Under the supervision of the instructor, the trainee should be able to do the following:

1. Identify a faulty section of primary cable using applicable drawings and equipment.

Materials and Equipment

Multimedia projector and screen
Power Line Worker Level Three: Distribution
PowerPoint® Presentation Slides
(ISBN 978-0-13-294912-5)
Computer
Whiteboard/chalkboard
Markers/chalk

Pencils and paper
Feeder diagram
Primary cable/fault locator
Thumper
Voltage detector
Module Examinations*
Performance Profile Sheets*

* Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Safety Considerations

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. Review safety guidelines associated with working on or around power distribution equipment. Emphasize the importance of proper housekeeping.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 40 hours are suggested to cover *Troubleshooting*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

Topic	Planned Time
Session I. Introduction; Safety Considerations; Preparation	
A. Introduction	_____
B. Safety Considerations	_____
1. Electrical Safety	_____
C. Be Prepared	_____
Session II. Basic Troubleshooting Approach	
A. Basic Troubleshooting Approach	_____
1. Aerial Systems	_____
2. URD Systems	_____
3. Fault Indicators	_____
Session III. Work Site Preparation; Emergency Transformers	
A. Work Site Preparation	_____
1. Vehicle Check	_____
2. Grounding the Vehicle	_____
3. Lighting	_____
4. Communications	_____
B. Emergency Transformers	_____
Sessions IV–XV. PT/Laboratory	
A. PT/Laboratory	_____
Have trainees identify a faulty section of primary cable using applicable drawings and equipment. This laboratory corresponds to Performance Task 1.	
Session XVI. Review and Testing	
A. Review	_____
B. Module Examination	_____
1. Trainees must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.	
C. Performance Testing	_____
1. Trainees must perform each task to the satisfaction of the instructor to receive recognition from NCCER. If applicable, proficiency noted during laboratory exercises can be used to satisfy the Performance Testing requirements.	
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.	

Module Overview

This module introduces the smart grid concept and describes how it affects power distribution customers. It covers smart grid technology, as well as its applications and benefits.

Objectives

Upon completion of this module, the trainee will be able to do the following:

1. Describe the basic concept of smart grid technology.
2. Describe the basic benefits of the smart grid.

Performance Tasks

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

Materials and Equipment

Multimedia projector and screen
Power Line Worker Level Three: Distribution
PowerPoint® Presentation Slides
(ISBN 978-0-13-294912-5)
Computer

Whiteboard/chalkboard
Markers/chalk
Pencils and scratch paper
Module Examinations*

* Single-module AIG purchases include the printed exam. If you have purchased the perfect-bound version of this title, download the exam from the IRC using your access code.

Safety Considerations

Ensure that the trainees are equipped with appropriate personal protective equipment and know how to use it properly. Review safety guidelines associated with working power distribution equipment. Emphasize the importance of proper housekeeping.

Additional Resources

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

Envision Smart Energy, Video. 8:39 minutes. Available at www.duke-energy.com.

Our Delicate Electrical Grid, Video. 3:06 minutes on the need for constructing new transmission lines. Available at www.smartgridnews.com.

Selection of short videos on future technologies. Available at www.smartgridnews.com.

The Power Grid. Interactive video in which supply and demand can be changed. Available at <http://tcipg.mste.illinois.edu>.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 2½ hours are suggested to cover *Introduction to Smart Grids*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources.

Topic	Planned Time
Session I. Introduction; Smart Grid Technology; Applications and Benefits; Resources; The Grid; Review and Testing	
A. Introduction	_____
B. Smart Grid Technology	_____
1. Net Metering	_____
2. Advanced Metering Infrastructure (AMI)	_____
3. Time-of-Day Metering	_____
4. Smart Meters	_____
5. Load Control Switch	_____
6. Phasor Measurement Unit	_____
7. Distributed Generation	_____
C. Applications and Benefits	_____
1. The Environment	_____
D. Resources	_____
1. Government	_____
2. Commercial	_____
E. The Grid	_____
1. Planned Investment	_____
2. Jobs	_____
F. Review	_____
G. Module Examination	_____
1. Trainees must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Training Report Form 200 and submit the results to the Training Program Sponsor.	

Module Overview

Today's leaders face a complex and challenging workforce, and having a capable leader is essential to the success of any team. This module introduces the trainee to the principles of leadership. Trainees will learn about:

- The construction industry today
- Business organizations
- Team building
- Gender and minority issues
- Communication
- Motivation
- Problem solving
- Decision making
- Safety
- Project control

Prerequisites

There are no prerequisites for this course.

Objectives

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

1. Discuss current issues and organizational structure in industry today.
2. Understand and incorporate leadership skills into work habits, including communications, motivation, team building, problem solving, and decision-making skills.
3. Demonstrate an awareness of safety issues, including the cost of accidents and safety regulations.
4. Identify a crew leader's typical safety responsibilities.
5. Show a basic understanding of the planning process, scheduling, and cost and resource control.

Performance Tasks

Under the supervision of the instructor, the trainee should be able to do the following:

1. Develop an estimate for a given work activity.
2. Develop and present a look-ahead schedule.

Industry Recognized Credentials

If you're training through an NCCER-accredited sponsor you may be eligible for credentials from NCCER's Registry. The ID number for this module is 46101-11. Note that this module may have been used in other NCCER curricula and may apply to other level completions. Contact NCCER's Registry at 888.622.3720 or go to nccer.org for more information.

Materials and Equipment

Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Power Line Worker Level Three: Distribution
PowerPoint® Presentation Slides
(ISBN 978-0-13-294912-5)
Multimedia projector and screen
Computer
Several construction job descriptions, including
one that is very vague and one that is overly
detailed
Several MSDSs appropriate to the craft
Original and as-built drawings of the same
project
A redline drawing
Sufficient copies of a roofing formwork detail
drawing
Sufficient copies of the worksheet with entries

Examples of schedules:*

- Bar chart
- Network schedule
- Short-term or look-ahead schedule

Two or three typical job schedules
Two job plans and pictures of each site
Construction drawings of a work platform
with a concrete footing, including specifications,
to be built on site:

- Materials cost list including lumber, concrete,
and hardware
- Labor cost list including concrete finishers,
carpenters, and masonry workers
- Photographs of the planned site

Set of construction drawings
Module Examinations**
Performance Profile Sheets**

* Because this module may be used for different industries, materials such as project schedules should be appropriate to the craft where possible.

**Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Additional Resources

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

Aging Workforce News, www.agingworkforcenews.com.

American Society for Training and Development (ASTD), www.astd.org.

Architecture, Engineering, and Construction Industry (AEC), www.aecinfo.com.

CIT Group, www.citgroup.com.

Equal Employment Opportunity Commission (EEOC), www.eeoc.gov.

National Association of Women in Construction (NAWIC), www.nawic.org.

National Census of Fatal Occupational Injuries (NCFOTI), www.bls.gov.

National Center for Construction Education and Research, www.nccer.org.

National Institute of Occupational Safety and Health (NIOSH), www.cdc.gov/niosh.

National Safety Council, www.nsc.org.

NCCER Publications:

- *Your Role in the Green Environment*
- *Sustainable Construction Supervisor*

Occupational Safety and Health Administration (OSHA), www.osha.gov.

Society for Human Resources Management (SHRM), www.shrm.org.

United States Census Bureau, www.census.gov.

United States Department of Labor, www.dol.gov.

USA Today, www.usatoday.com.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. This course is designed to be taught in one of two formats: two 8-hour sessions (such as all-day workshops) or eight 2-hour sessions (such as after-work training seminars). Because of this, each session below has a suggested time period of two hours. If leading 8-hour sessions, simply teach four of these 2-hour sessions both times your class meets. All instructors will need to adjust the time required for participant activities and testing based on class size and resources. Because laboratories often correspond to Performance Tasks, the proficiency of the trainees may be noted during these exercises for Performance Testing purposes.

Topic	Planned Time
Session I. Section One – The Basics	
A. Industry Today	_____
1. The Need for Training	_____
2. Impact of Technology	_____
B. Gender and Cultural Issues	_____
1. Communication Styles of Men and Women	_____
2. Language Barriers	_____
3. Cultural Differences	_____
4. Sexual Harassment	_____
5. Gender and Minority Discrimination	_____
C. Business Organizations	_____
1. Division of Responsibility	_____
2. Authority, Responsibility, and Accountability	_____
3. Job Descriptions	_____
4. Policies and Procedures	_____
Session II. Section Two – Leadership Skills, Part One	
A. Introduction to Leadership	_____
B. The Shift in Work Activities	_____
C. Becoming a Leader	_____
1. Characteristics of a Leader	_____
2. Functions of a Leader	_____
3. Leadership Styles	_____
4. Ethics in Leadership	_____
D. Communication	_____
1. Verbal Communication	_____
2. Nonverbal Communication	_____
3. Written or Visual Communication	_____
4. Communication Issues	_____
E. Motivation	_____
1. Employee Motivators	_____
2. Motivating Employees	_____
F. Team Building	_____
1. Successful Teams	_____
2. Building Successful Teams	_____

