

COURSE OVERVIEW

This course introduces the basic leadership skills a crew leader needs in order to supervise a crew. Trainees will learn about:

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

PREREQUISITES

There are no prerequisites for this course.

LEARNING OBJECTIVES

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

1. Discuss current issues and organizational structure in the construction industry today.
2. Understand and incorporate leadership skills into work habits, including communication, 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 supervisor's typical safety responsibilities.
5. Show a basic understanding of the planning process, scheduling, and cost and resource control.

PERFORMANCE OBJECTIVES

This is a knowledge-based module—there is no performance profile examination.

NCCER STANDARDIZED CRAFT TRAINING PROGRAM

The National Center for Construction Education and Research (NCCER) provides a standardized national program of accredited craft training. Key features of the program include instructor certification, competency-based training, and performance testing. The program provides trainees, instructors, and companies with a standard form of recognition through a National Craft Training Registry. The program is described in full in the *Guidelines for Accreditation*, published by the NCCER. For more information on standardized craft training, contact the NCCER by writing us at 5000 North University Avenue, Gainesville, FL 32608, calling 352-334-0911, or emailing info@nccer.org. More information may be found at our Web site at www.nccer.org.

NOTE TO INSTRUCTORS

If you are training under an Accredited NCCER Sponsor, note that you may be eligible for dual credentials for successful completion of Introductory Skills for the Crew Leader. When submitting the Form 200, indicate completion of the two module numbers that apply to Introductory Skills for the Crew Leader – MT101 (from NCCER's Contren® Management Series) and 28307-05 (from NCCER's Masonry Level Three) and transcripts will be issued to you accordingly.

HOW TO USE THIS ANNOTATED INSTRUCTOR'S GUIDE

Each page presents two sections of information. The larger section displays each page exactly as it appears in the Trainee Guide. The narrow column ties suggested trainee and instructor actions to each page and provides icons to call your attention to material, safety, audiovisual, or testing requirements. The bottom of each page includes space for your notes.

Review questions and participant exercises are found periodically throughout the Trainee Guide in order for the trainees to test their knowledge. An answer key to these review questions and suggested answers for the participant exercises are located at the back of this Annotated Instructor's Guide. After trainees complete their review questions, go over the correct answers with them to be sure they understand all concepts.

PREPARATION

Before teaching this course, you should review the Course Outline, Learning Objectives, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

MATERIALS AND EQUIPMENT LIST

Materials:

Transparencies

Markers/chalk

Calculator

Pencils/scratch paper

Example of OSHA Log Books

Examples of MSDS Sheets

Copies of Module Examinations*

Equipment:

Overhead projector

Screen (or large blank wall)

Whiteboard/chalkboard

*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 is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated trainees interested in further study. These are optional materials for continued education rather than for task training.

Construction Contracting, 1994. Richard H. Clough and Glenn A. Sears. New York: John Wiley & Sons.

Construction Management, 1997. Daniel W. Halpin and Ronald W. Woodhead. New York: John Wiley & Sons.

Construction Operations Manual of Policies and Procedures, 2000. Andrew Civitello Jr. New York: McGraw-Hill.

Professional Construction Management, 1991. Donald S. Barrie, Boyd C. Paulson (Contributor). New York: McGraw-Hill.

TEACHING TIME FOR THIS COURSE

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.

Topic	Planned Time
Session I. Orientation to the Job	
A. Overview of the Construction Industry	_____
1. Historical Importance of the Construction Industry	_____
2. Growth and Economics of the Construction Industry	_____
3. Changing Values of Workers	_____
B. The Construction Industry Today	_____
1. Training	_____
2. New Technology	_____
C. Gender and Minority Issues	_____
1. Communication Styles of Men and Women	_____
2. Language Barriers	_____
3. Cultural Differences	_____
4. Sexual Harassment	_____
5. Gender and Minority Discrimination	_____
D. Construction Projects	_____
E. The Construction Organization	_____
1. Division of Responsibility	_____
2. Authority and Responsibility	_____
3. Job Descriptions	_____
4. Policies and Procedures	_____
Session II. Leadership Skills, Part One	
A. Introduction to Supervision	_____
B. The Shift in Work Activities	_____
C. Becoming a Leader	_____
1. Characteristics of Leaders	_____
2. Functions of a Leader	_____
3. Leadership Styles	_____
4. Ethics in Leadership	_____
D. Communication	_____
1. Verbal Communication	_____
2. Non-Verbal Communication	_____
3. Written or Visual Communication	_____
4. Communication Issues	_____
E. Motivation	_____
1. Employee Motivators	_____
2. Motivating Employees	_____

Session III. Leadership Skills, Part Two

- A. Team Building
 - 1. Successful Teams
 - 2. Building Successful Teams
- B. Getting the Job Done
 - 1. Delegating Responsibilities
 - 2. Implementing Policies and Procedures
- C. Problem Solving and Decision Making
 - 1. Problem Solving vs. Decision Making
 - 2. Types of Decisions
 - 3. Formal Problem-Solving Techniques
 - 4. Special Leadership Problems

Session IV. Safety, Part One

- A. Safety Overview
- B. Costs of Accidents
 - 1. Insured Costs
 - 2. Uninsured Costs
- C. Safety Regulations
 - 1. Workplace Inspections
 - 2. Penalties for Violations

Session V. Safety, Part Two

- A. Safety Responsibilities
 - 1. Safety Program
 - 2. Safety Policies and Procedures
 - 3. Hazard Identification and Assessment
 - 4. Safety Information and Training
 - 5. Safety Record Systems
 - 6. Accident Investigation Procedures
- B. Supervisor Involvement in Safety
 - 1. Safety Meetings
 - 2. Inspections
 - 3. First Aid
 - 4. Fire Protection and Prevention
 - 5. Substance Abuse
 - 6. Accident Investigations
- C. Promoting Safety
 - 1. Meetings
 - 2. Contests
 - 3. Recognition and Awards
 - 4. Publicity

Session VI. Project Control, Part One

- A. Project Control Overview
- B. Project Delivery Systems
 - 1. General Contracting
 - 2. Design-Build
 - 3. Construction Management

- C. An Overview of Planning
 - 1. What is Planning?
 - 2. Why Plan?
- D. Stages of Planning
 - 1. Pre-Construction Planning
 - 2. Construction Planning
- E. The Planning Process
 - 1. Establishing a Goal
 - 2. Identifying the Work to be Done
 - 3. Determining Tasks
 - 4. Communicate Responsibilities
 - 5. Follow-Up
- F. Planning Resources
 - 1. Planning Materials
 - 2. Planning Equipment
 - 3. Planning Tools
 - 4. Planning Labor
- G. Ways to Plan

Session VII. Project Control, Part Two

- A. Estimating
- B. Scheduling
 - 1. The Scheduling Process
 - 2. Bar Charts
 - 3. Network Schedule
 - 4. Short-Interval Production Scheduling
 - 5. Updating a Schedule

Session VIII. Project Control, Part Three

- A. Cost Awareness And Control
 - 1. Categories of Costs
 - 2. Field Reporting System
 - 3. Supervisor's Role in Cost Control
- B. Resource Control
 - 1. Control
 - 2. Materials Control
 - 3. Equipment Control
 - 4. Tools Control
 - 5. Labor Control
- C. Production and Productivity
- D. Summary
 - 1. Summarize Course
 - 2. Answer Questions
- E. Module Examination
 - 1. Trainee must score 70% or higher to receive recognition from the NCCER.
 - 2. Record testing results on Craft Training Report Form 200 and submit the results to the Training Program Sponsor.

Annotated Instructor's Guide**MODULE OVERVIEW**

This module covers the uses, attachments, operating controls, maintenance requirements, and operating methods for bulldozers, emphasizing safe operation of the equipment.

PREREQUISITES

Prior to training with this module, it is recommended that the trainee shall have successfully completed *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three, Module 22301-06.*

OBJECTIVES

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

1. Describe the uses of a dozer.
2. Identify the components and controls on a typical dozer.
3. Explain safety rules for operating a dozer.
4. Perform prestart inspection and maintenance procedures.
5. Start, warm up, and shut down a dozer.
6. Perform basic maneuvers with a dozer.
7. Perform basic earthmoving and excavation operations with a dozer.

PERFORMANCE TASKS

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

1. Demonstrate proper prestart inspection of a dozer.
2. Perform basic maneuvers with a dozer, including moving forward, moving backward, turning with blade up, and straight dozing.
3. Create a level pad (approximately 20 × 20 feet, \pm 1/10 foot).
4. Push a stockpile while maintaining proper windrows and berms.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Photographs of bulldozer attachments
Transparencies	Company safety manual
Blank acetate sheets	Bulldozer maintenance manual
Transparency pens	Daily inspection checklist
Whiteboard/chalkboard	Machine maintenance records
Markers/chalk	Hand tools
Pencils and scratch paper	Grease gun
Appropriate personal protective equipment	Air gauge
Bulldozer	Hydrometer
Manufacturer's literature on different bulldozers	Rags
Bulldozer operator's manual	Fluids for equipment servicing
Manufacturer's literature on attachments	Chocks and tie-down equipment
Bulldozer attachments	Safety video/DVD (optional)

(continued)

TV/VCR/DVD player (optional)
Boxes of damp sand
Flat tools (such as an 8-inch putty knife)

Copies of the Quick Quiz*
Module Examinations**
Performance Profile Sheet**

* Located in the back of this module.

**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. This module requires trainees to maintain and operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. Review chemical safety and proper disposal. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

Caterpillar Performance Handbook, Edition 27. A CAT® Publication. Peoria, IL: Caterpillar, Inc.

Excavation and Grading Revised, 1987, Nick Capachi. Carlsbad, CA: Craftsman Book Company.

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 20 hours are suggested to cover *Dozers*. 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 and Identification of Equipment	
A. Introduction	_____
B. Identification of Equipment	_____
C. Attachments	_____
Sessions II. Safety, Inspection, and Maintenance	
A. Safety	_____
B. Inspection and Maintenance	_____
C. Laboratory – Trainees practice prestart inspection and maintenance. This laboratory corresponds to Performance Task 1.	_____
Session III. Basic Bulldozer Operation	
A. Preparing to Work	_____
B. Basic Maneuvering	_____
C. Laboratory – Trainees practice performing basic maneuvers with a dozer. This laboratory corresponds to Performance Task 2.	_____
Sessions IV and V. Operating The Blade	
A. Operating the Blade	_____
B. Dozing Operations	_____
C. Laboratory – Trainees practice pushing a stockpile. This laboratory corresponds to Performance Task 4.	_____

Sessions VI and VII. Additional Operations

- A. Moving Large Objects _____
- B. Finish Work _____
- C. Laboratory – Trainees practice creating a level pad. This laboratory corresponds to Performance Task 3. _____
- D. Confined Areas and Unstable Soils _____
- E. Pushing Other Equipment _____
- F. Using Attachments _____
- G. Moving the Bulldozer _____

Session VIII. 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 Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

Annotated Instructor's Guide**MODULE OVERVIEW**

Describes the types of backhoe loaders along with their applications, operating controls, preventive maintenance requirements, and basic operating techniques.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three*, Modules 22301-06 and 22302-06.

OBJECTIVES

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

1. Describe the uses of a backhoe.
2. List types of backhoes.
3. Identify the components and controls on a typical backhoe.
4. Explain safety rules for operating a backhoe.
5. List accessories used on a backhoe.
6. Perform prestart inspection and maintenance procedures.
7. Start, warm up, and shut down a backhoe.
8. Perform basic maneuvers with a backhoe.
9. Perform basic earthmoving operations with a backhoe.

PERFORMANCE TASKS

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

1. Demonstrate prestart inspection of a backhoe.
2. Perform proper startup and shutdown of a backhoe.
3. Perform basic backhoe maneuvers, including moving forward, turning, moving in reverse, and operating the front loading bucket.
4. Perform the operation of setting up a backhoe, using stabilizers, and digging with the bucket.
5. Perform an excavation of a trench 20 to 40 feet long with spoil piles at least 2 feet from the edge.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Backhoe maintenance manual
Transparencies	Machine maintenance records
Blank acetate sheets	Hand tools
Transparency pens	Grease gun
Whiteboard/chalkboard	Air gauge
Markers/chalk	Hydrometer
Pencils and scratch paper	Rags
Appropriate personal protective equipment	Fluids for equipment servicing
Backhoe	Safety video (optional)
Backhoe operator's manual	TV/VCR/DVD player (optional)
Company safety manual	Traffic cones or devices for an obstacle course
Daily inspection checklist	Paper targets or similar objects

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Manufacturer's literature on backhoe attachments
Chocks and tie-down equipment
Copies of the Quick Quiz *

Module Examinations**
Performance Profile Sheet**

* Located in the back of this module.

**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 trainees are equipped with appropriate personal protective equipment and that they know how to use it properly. This module requires trainees to operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

Caterpillar Performance Handbook, Edition 27. A CAT® Publication. Peoria, IL: Caterpillar, Inc.

Excavation and Grading Revised, 1987, Nick Capachi. Carlsbad, CA: Craftsman Book Company.

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 2 ½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 30 hours are suggested to cover *Backhoes*. 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, Identification of Equipment, and Attachments	
A. Introduction	_____
B. Identification of Equipment	_____
C. Attachments	_____
Session III. Safety, Inspection, and Maintenance	
A. Safety	_____
B. Inspection and Maintenance	_____
C. Laboratory – Trainees practice performing a prestart inspection. This laboratory corresponds to Performance Task 1.	_____
Sessions IV and V. Basic Operation	
A. Preparing to Work	_____
B. Laboratory – Trainees perform proper startup, warmup, and shutdown procedures. This laboratory corresponds to Performance Task 2.	_____
C. Basic Maneuvering	_____
D. Operating the Front Loading Bucket	_____
E. Laboratory – Trainees practice basic backhoe maneuvers. This laboratory corresponds to Performance Task 3.	_____

Sessions VI through VIII. Backhoe Operation

- A. Setting Up the Backhoe _____
- B. Using the Stabilizers _____
- C. Operating the Backhoe _____
- D. Laboratory – Trainees practice setting up the backhoe, using stabilizers, and operating the bucket. This laboratory corresponds to Performance Task 4. _____

Sessions IX through XI. Work Activities

- A. Loading and Stockpiling _____
- B. Trenching and Loading _____
- C. Demolition _____
- D. Setting Pipe _____
- E. Excavating Footings and Foundations _____
- F. Working in Confined Areas _____
- G. Working in Unstable Soils _____
- H. Transporting the Backhoe _____
- I. Laboratory – Trainees practice excavating a trench. This laboratory corresponds to Performance Task 5. _____

Session XII. Module Examination and Performance Testing

- A. Review _____
- B. Module Examination _____
 - 1. Trainees must score 70% or higher to receive recognition from NCCER.
 - 2. Record the testing results on Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

Annotated Instructor's Guide**MODULE OVERVIEW**

This module presents information on the use, safe operation, and maintenance of hydraulic excavators, including standard and telescoping excavators. It teaches basic operation of equipment and earthwork, such as ditching, grading, placing riprap, and slope finishing. It also describes safety issues and preventive maintenance activities.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three*, Modules 22301-06 through 22303-06.

OBJECTIVES

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

1. Describe the uses of an excavator.
2. Identify the types of excavators and their uses.
3. Identify the components and controls on a typical excavator.
4. Explain safety rules for operating an excavator.
5. Describe and use accessories used on an excavator.
6. Perform prestart inspection and maintenance procedures.
7. Start, warm up, and shut down an excavator.
8. Perform basic maneuvers with an excavator.
9. Perform basic earthmoving and excavation operations with an excavator.

PERFORMANCE TASKS

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

1. Demonstrate proper prestart inspection of an excavator.
2. Perform basic maneuvers, including moving forward, moving backward, making a pivot turn, and making a spot turn.
3. Create a 10 × 10 excavation at least 3 feet deep.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Company safety manual
Transparencies	Daily inspection checklist
Blank acetate sheets	Excavator operator's manual (standard and telescoping boom)
Transparency pens	Excavator maintenance manual
Whiteboard/chalkboard	Machine maintenance records
Markers/chalk	Load capacity charts
Pencils and scratch paper	Chocks and tie-down equipment
Appropriate personal protective equipment	OSHA PowerPoint presentation on excavator safety or video on excavator safety (optional)
Brochures or pictures of various makes and models of excavators	TV/VCR/DVD player (optional)
Manufacturer's literature on attachments used with excavators	Multimedia projector for PowerPoint presentation (optional)
Excavator	Traffic cones or devices
Hand tools	Paper targets
Grease gun	Spray paint
Air gauge	Module Examinations*
Hydrometer	Performance Profile Sheet*
Rags	
Fluids for equipment servicing	

* 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. This module requires trainees to operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy and have appropriate personal protection equipment.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

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 *Excavators*. 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 and Identification of Equipment	
A. Introduction	_____
B. Hydraulic Excavators	_____
C. Telescoping Excavators	_____
D. Uses of an Excavator	_____
E. Attachments	_____
Sessions II and III. Safety, Inspection, and Maintenance	
A. Safety	_____
B. Laboratory – Trainees practice identifying safety features on an excavator.	_____
C. Inspection and Maintenance	_____
D. Laboratory – Trainees practice completing proper prestart inspection. This laboratory corresponds to Performance Task 1.	_____
Sessions IV and V. Basic Operation I	
A. Preparing to Work	_____
B. Basic Maneuvering	_____
C. Laboratory – Trainees practice executing basic maneuvers with an excavator. This laboratory corresponds to Performance Task 2.	_____
Sessions V. Basic Operation II	
A. Operating the Hoe and Bucket	_____
B. Stability While Operating	_____
C. Laboratory – Trainees practice operating the hoe and bucket.	_____
Sessions VI through VIII. Work Activities I	
A. General Excavating	_____
B. Excavating a Foundation	_____
C. Loading Trucks	_____
D. Laboratory – Trainees practice excavating with an excavator. This laboratory corresponds to Performance Task 3.	_____
Sessions IX and X. Work Activities II	
A. Lifting Objects	_____
B. Trenching and Laying Pipe	_____
C. Working in Unstable Soils	_____
D. Using Attachments	_____
E. Transporting an Excavator	_____

Sessions X through XIII. Truck-Mounted, Telescoping-Boom Excavator

- A. Preparing to Work _____
- B. Basic Maneuvering _____
- C. Work Activities _____
- D. Laboratory – Trainees practice operating a truck-mounted, telescoping-boom excavator. _____

Session XIV. Module Examination and Performance Testing

- A. Review _____
- B. Module Examination _____
 - 1. Trainees must score 70% or higher to receive recognition from NCCER.
 - 2. Record the testing results on Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

Annotated Instructor's Guide**MODULE OVERVIEW**

This module introduces concepts and procedures involved in the operation of motor graders. It teaches basic daily preventive maintenance, safety checking, and control of the machine. It covers main attachments used with motor graders, and the use of motor graders in performing ditching, grading, ripping, and scarifying operations.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three*, Modules 22301-06 through 22304-06.

OBJECTIVES

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

1. Describe the uses of a motor grader.
2. List types of motor graders and their uses.
3. Identify the components and controls on a typical motor grader.
4. Explain safety rules for operating a motor grader.
5. List accessories used on a motor grader.
6. Perform prestart inspection and maintenance procedures.
7. Start, warm up, and shut down a motor grader.
8. Perform basic maneuvers with a motor grader.
9. Perform basic earthmoving operations with a motor grader.

PERFORMANCE TASKS

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

1. Demonstrate proper prestart inspection of a motor grader.
2. Perform basic maneuvers, including moving forward, moving backward, and turning.
3. Grade a rough grade by following grade stakes placed along a 300-foot section, which is at least double the width of the machine.
4. Demonstrate rotation of the blade for high-bank grading.
5. Cut a V ditch with a 3 to 1 slope.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Air gauge
Transparencies	Hydrometer
Blank acetate sheets	Rags
Transparency pens	Fluids for equipment servicing
Whiteboard/chalkboard	One or more boxes of damp sand or dirt
Markers/chalk	Long curved bladed tools
Pencils and scratch paper	Survey stakes
Appropriate personal protective equipment	Survey marking tape
Brochures or pictures of motor graders	Survey instrument manuals and brochures
Motor grader operator's manual	State highway agency specifications
Company safety manual	Chocks and tie-down equipment
Daily inspection checklist	Motor grader safety video (optional)
Motor grader maintenance manual	TV/VCR/DVD player (optional)
Machine maintenance records	Traffic cones or devices
Motor grader	Module Examinations*
Hand tools	Performance Profile Sheet*
Grease gun	

* 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. This module requires trainees to operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy and have appropriate personal protection equipment.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

Grader Design Changes with the Times. 2002. Kirk Landers, Educational Director, Better Roads. (<http://www.betterroads.com/articles/NewProds/May02bid.htm>)

Basic Equipment Operator, 1994. NAVEDTRA 14081, Morris, John T. (preparer), Naval Education and Training Professional Development and Technology Center.

Operator's Manual Grader, Heavy Road, Motorized Caterpillar Model 130G, (NSN 3805-01-150-4795), TM

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 *Motor Graders*. 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 to Motor Graders	
A. Uses of the Motor Grader	_____
B. Identification of Equipment	_____
C. Controls and Instruments	_____
D. Attachments	_____
Session III. Safety, Inspection, and Maintenance	
A. Safety	_____
B. Inspection and Maintenance	_____
C. Laboratory – Trainees practice completing proper prestart inspection. This laboratory corresponds to Performance Task 1.	_____
Sessions IV and V. Basic Operation	
A. Preparing to Work	_____
B. Basic Maneuvering	_____
C. Laboratory – Trainees practice executing basic maneuvers with a motor grader. This laboratory corresponds to Performance Task 2.	_____
Sessions VI and VII. Operating the Moldboard	
A. Operating the Moldboard	_____
B. Laboratory – Trainees practice operating the moldboard and rotating the blade for high-bank grading. This laboratory corresponds to Performance Task 4.	_____
Sessions VIII through X. Work Activities	
A. Mixing and Windrowing	_____
B. Cutting Ditches	_____
C. Ripping and Scarifying	_____
D. Blending and Spreading Material	_____
E. Laboratory – Trainees practice cutting a V ditch. This laboratory corresponds to Performance Task 5.	_____
Sessions XI through XIV. Grading	
A. Grading Unpaved Roads	_____
B. Grading Around an Object	_____
C. Grading Slopes	_____
D. Finish Grading	_____
E. Transporting a Motor grader	_____
F. Laboratory – Trainees practice grading a rough grade by following grade stakes. This laboratory corresponds to Performance Task 3.	_____

Session XV. Special Considerations

- A. Snow Plowing
- B. Working in Wet Areas
- C. Roding the Grader

Session XVI. Review, Module Examination and Performance Testing

- A. Review
- B. Module Examination
 - 1. Trainees must score 70% or higher to receive recognition from NCCER.
 - 2. Record the testing results on Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

Annotated Instructor's Guide**MODULE OVERVIEW**

This module presents advanced topics for equipment operators, including safety, controlling and working around water, calculating operating costs, and laying pipe. It discusses safety meetings, reporting, inspections, investigations, and hazardous material requirements. It describes the use, calibration, and maintenance of laser instruments.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three*, Modules 22301-06 through 22305-06.

OBJECTIVES

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

1. Identify and explain various components of a company's safety program.
2. Describe the reasons and procedure for an OSHA inspection.
3. Identify and explain the role you play in keeping yourself safe.
4. Describe ways to identify unsafe excavation sites and ways to help keep excavations safe.
5. Discuss safety methods when working around water.
6. Identify ways to reduce project costs.
7. Describe and demonstrate safe loading and transport of heavy equipment.
8. Demonstrate an understating of laser and GPS technology.

PERFORMANCE TASKS

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

1. Calculate cycle time.
2. Interpret relevant portions of an accident report.
3. Simulate safe over-the-road driving with a loaded dump truck.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Sample MSDSs
Transparencies	Hazardous materials container
Blank acetate sheets	One or more boxes of sand or dirt
Transparency pens	Digging tools
Whiteboard/chalkboard	Equipment operator's manual
Markers/chalk	Various types of portable pumps
Pencils and scratch paper	Dump truck
Appropriate personal protective equipment	Laser instruments
Safety videos (optional)	Module Examinations*
TV/VCR/DVD player (optional)	Performance Profile Sheet*
Sample accident reports	

* 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. This module requires trainees to operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy and have appropriate personal protection equipment.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

Construction Safety Planning, 1995. David V. MacCollum, New York, NY: Van Nostrand Reinhold.

Clean Water Act? What's That?, July/August 2000. Janice Kaspersen, *Erosion Control* magazine. Forester Communications, Inc.

Dewatering and Groundwater Control, 1983. Army TM 5-818-5; Navy NAVFAC P-418; Air Force AFM 88-5, Chap 6; Departments of the Army, the Navy, and the Air Force.

Moving the Earth, 1988. H.L. Nichols. Greenwich, CT: North Castle Books.

Practical Advice for Hauling Heavy Equipment, September/October 2005. George Leposky, *Grading and Excavation Contractor* magazine. Forester Communications, Inc.

Soil Freezing Gets a Warm Reception Here, New Approach Makes Freezing Easier to Do, Less Expensive. James Miller, GeoEngineers, Inc., March 8, 1999, Seattle Daily Journal and djc.com (Copyright 2006) <http://www.djc.com/special/construct99/10050572.htm>

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 20 hours are suggested to cover *Advanced Operational Techniques*. 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. Safety	
A. Company Safety Structure	_____
B. Safety Investigations and Inspections	_____
C. Laboratory – Trainees practice interpreting an accident report. This laboratory corresponds to Performance Task 2.	_____
D. Hazard Communication and Hazardous Materials	_____
E. Personal Responsibility	_____
Sessions II and III. Excavation Safety and Transporting Equipment	
A. Soil Hazards and Safety Guidelines	_____
B. Indication of an Unstable Trench	_____
C. Shoring Systems	_____
D. Shielding Systems	_____
E. Sloping and Other Systems	_____
F. Transporting Equipment	_____

Session IV. Water

- A. Water Hazards: Surface and Groundwater
- B. Controlling Water
- C. Wet Digging
- D. Working Around Water

Sessions V and VI. Operating Costs

- A. Haul Routes
- B. Machine Cycle Time
- C. Laboratory – Trainees practice driving a loaded dump truck over the road. This laboratory corresponds to Performance Task 3.
- D. Laboratory – Trainees practice calculating cycle time. This laboratory corresponds to Performance Task 1.
- E. Productivity
- F. Hourly Rates
- G. Laboratory – Trainees practice calculating operating costs.

Session VII. Laying Pipe and Automatic Grade Control Systems

- A. Laying Pipe
- B. Laser Instruments
 - 1. Transmitters and Receivers
 - 2. Use of Construction Lasers
 - 3. Laser Safety and Calibration
- C. Laser-Based Automatic Grade Control Systems
- D. GPS-Based Automatic Grade Control Systems

Session VIII. Review, Module Examination and Performance Testing

- A. Review
- B. Module Examination
 - 1. Trainees must score 70% or higher to receive recognition from NCCER.
 - 2. Record the testing results on Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

MODULE OVERVIEW

This module describes the use of various types of heavy equipment to finish and trim grades and slopes of roads, pads, ditches, and other structures; specifications used for grading; and procedures for checking the final grade. It presents soil stabilization methods and the proper use of geotextile materials for erosion control.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three*, Modules 22301-06 through 22306-06.

OBJECTIVES

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

1. Explain the requirements for finishing and final grading of earthwork.
2. Use heavy equipment to perform fine grading and finishing work.
3. Describe and demonstrate techniques for finish grading of subgrade, base, slopes, parking areas, and drainage structures.

PERFORMANCE TASKS

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

1. Demonstrate proper setup of geotextile material for sediment control and for lining a small underdrain.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Samples of various binders
Transparencies	Manufacturers' literature on binders
Blank acetate sheets	Sample NPDES permit
Transparency pens	Storm water control plan
Whiteboard/chalkboard	Samples of geotextiles
Markers/chalk	Manufacturers' literature on geotextiles
Pencils and scratch paper	Geotextile materials
Appropriate personal protective equipment	Long stakes
Motor grader	Hammer
Bulldozer	Module Examinations*
Telescoping excavator	Performance Profile Sheet*

* 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. This module requires trainees to operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy and have appropriate personal protection equipment.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

Moving the Earth, 1988. H.L. Nicholas. Greenwich, CT: North Castle Books.

Caterpillar Performance Handbook, Edition 27. A CAT® Publications. Peoria, IL: Caterpillar, Inc.

Concepts in Physics, 1974. Franklin Miller, Jr., Thomas J. Dillon, and Malcolm K. Smith. New York, NY: Harcourt Brace Jovanovich, Inc.

Soil Stabilization for Pavements Mobilization Construction Engineer Manual (EM 1110-3-137), 1984. Department of the Army, Corps of Engineers.

Using Lime for Soil Stabilization and Modification, 2001. National Lime Association.
(<http://www.lime.org>)

Merriam-Webster Online Dictionary, 2005. Merriam-Webster, Inc.

Basic Equipment Operator, 1994. NAVEDTRA 14081, Morris, John T. (preparer), Naval Education and Training Professional Development and Technology Center.

Arrest that Fugitive Dust, Roberta Baxter, March/April 2002. Forrester Communications, Inc.

National Asphalt Pavement Association (NAPA) web site (<http://www.hotmix.org/>)

Using Lime for Soil Stabilization and Modification, 2001. National Lime Association.
(<http://www.lime.org>)

Silt Fence Installation Efficacy: Definitive Research Calls for Toughening Specifications and Introducing New Technology, Joel Sprague, P.E., TRI/Environmental, Inc. and Tom Carpenter, Carpenter Erosion Control. ([www.ieca.org/Resources/Article/Article SFInstallationEfficacy.asp](http://www.ieca.org/Resources/Article/Article%20SFInstallationEfficacy.asp))

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 20 hours are suggested to cover *Finishing and Grading*. 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. Grading to Specifications	
A. Grading to Specifications	_____
B. Crowns for Roads	_____
C. Superelevation	_____
D. Flowlines for Pipe	_____
Session II. Stabilizing Soils	
A. Choosing a Binder	_____
B. Stabilization Procedure	_____
C. Laboratory – Trainees practice working with soil stabilizers.	_____

Sessions III and IV. Finish Grading

- A. Finish Slopes _____
- B. Finish Subgrade and Base _____
- C. Ditches and Trenches _____
- D. Parking Lots, Sidewalks, and Curbs _____
- E. Landscaping _____
- F. Laboratory – Trainees practice performing finish grading procedures. _____

Sessions V and VI. Erosion Control

- A. Storm Water Runoff _____
- B. Geotextiles _____
- C. Laboratory – Trainees practice setting up geotextile material for sediment control and lining a small underdrain. This laboratory corresponds to Performance Task 1. _____

Session VII. Automated Grading Systems

- A. Laser Instruments _____
- B. Stakeless and Stringless Grading Systems _____
- C. Laboratory – Trainees practice performing finish grading procedures using an automated grading system. _____

Session VIII. Review, Module Examination and Performance Testing

- A. Review _____
- B. Module Examination _____
 - 1. Trainees must score 70% or higher to receive recognition from NCCER.
 - 2. Record the testing results on Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.

Annotated Instructor's Guide**MODULE OVERVIEW**

This module describes soil classification systems and explains how shrink and swell factors affect equipment selection. It discusses how soil conditions affect equipment performance and explains techniques for working with various soil types.

PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum; Heavy Equipment Operations Level One; Heavy Equipment Operations Level Two; and Heavy Equipment Operations Level Three*, Modules 22301-06 through 22307-06.

OBJECTIVES

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

1. Describe the characteristics of different types of soils.
2. Explain the various engineering properties of soil.
3. State factors that affect soil density.
4. Discuss how soil factors affect equipment selection.
5. Describe wet digging techniques.

PERFORMANCE TASKS

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

1. Identify five basic types of soils relevant to the local geographic area, and summarize their characteristics.
2. Compute shrinkage and relative compaction for two different types of soils.
3. Read results from a field density test and explain what additional compaction effort is needed.

MATERIALS AND EQUIPMENT LIST

Overhead projector and screen	Samples of various types of soils
Transparencies	Standard soil sieves
Blank acetate sheets	Sand cone testing equipment
Transparency pens	Soil testing equipment
Whiteboard/chalkboard	Shovels
Markers/chalk	Boxes of compacted soil
Pencils and scratch paper	Module Examinations*
Appropriate personal protective equipment	Performance Profile Sheet*

* 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 trainees are equipped with appropriate personal protective equipment and that they know how to use it properly. This module requires trainees to operate heavy equipment. Ensure that all trainees are briefed on machine safety rules and review the operator's manual before operating equipment. This module may require trainees to visit construction sites. Ensure that all trainees are briefed on site safety policy and have appropriate personal protection equipment.

ADDITIONAL RESOURCES

This module is intended to present thorough resources for task training. The following reference work is suggested for both instructors and motivated trainees interested in further study. This is optional material for continued education rather than for task training.

Arrest that Fugitive Dust, 2002. Roberta Baxter, *Erosion Control* magazine, Forrester Communications, Inc.

Basic Equipment Operator, 1994. NAVEDTRA 14081, Morris, John T. (preparer), Naval Education and Training Professional Development and Technology Center.

Caterpillar Performance Handbook, Edition 33. A CAT® Publication. Peoria, IL: Caterpillar, Inc.

Concepts in Physics, 1974. Franklin Miller, Jr., Thomas J. Dillon, and Malcolm K. Smith. New York, NY: Harcourt Brace Jovanovich, Inc.

Excavation and Grading Handbook, 1987. Nicholas E. Capachi. Carlsbad, CA: Craftsman Book Company.

Managing Saline Soils in North Dakota, 2003. David Franzen, SF-1087, North Dakota State University (NDSU) Extension Service North Dakota State University of Agriculture and Applied Science, and the U.S. Department of Agriculture cooperating.
(<http://www.ext.nodak.edu/extpubs/plantsci/soilfert/sf1087.pdf>).

Moving the Earth, 3rd Edition, 1988. H.L. Nicholas. Greenwich, CT: North Castle Books.

Optimizing Soil Compaction and Other Strategies, 2004. Donald H. Gray, *Grading and Excavation Contractor* magazine. Forester Communications, Inc.

Soils Manual for the Design of Asphalt Pavement Structures, 1978. Lexington, KY: The Asphalt Institute.

Soil Stabilization for Pavements Mobilization Construction Engineer Manual (EM 1110-3-137), 1984. Department of the Army, Corps of Engineers.

Temporary Stream and Wetland Crossing Options for Forest Management, 1998. Charles R. Blinn, Rick Dahlman, Lola Hislop, and Michael A. Thompson, USDA Forest Service, North Central Research Station, General Technical Report NC-202.

Using Lime for Soil Stabilization and Modification, 2001. National Lime Association website.
(<http://www.lime.org>).

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 *Soils*. 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. Identifying Soils	
A. Introduction	_____
B. Soil Classification	_____
C. Soil Characteristics	_____
D. Laboratory – Trainees practice identifying five different types of soil. This laboratory corresponds to Performance Task 1.	_____
E. Engineering Properties of Soil	_____
F. Soil Density	_____
G. Laboratory – Trainees practice interpreting a field density test and determining additional compaction needed. This laboratory corresponds to Performance Task 3.	_____
H. The Effects of Moisture	_____
Session II. Working with Soil	
A. Swell and Shrink Factors	_____
B. Laboratory – Trainees practice computing shrinkage and compaction of different soils. This laboratory corresponds to Performance Task 2.	_____
C. Weight bearing Capacity and Flotation	_____
D. Rolling and Digging Resistance	_____
E. Traction and Working in Mud	_____
Session III. Review, Module Examination and Performance Testing	
A. Review	_____
B. Module Examination	_____
1. Trainees must score 70% or higher to receive recognition from NCCER.	
2. Record the testing results on Craft 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 Craft Training Report Form 200, and submit the results to the Training Program Sponsor.	

