ABSTRACT

This competency analysis profile lists 155 competencies that have been identified by employers as core competencies for inclusion in programs to train forest industry and resource conservation workers. The core competencies are organized into 10 units dealing with the following: general safety precautions, natural resource industry operations, soil conservation, equipment maintenance, equipment operation, facility construction and maintenance, business management, employability skills, the forest industry, and resource conservation. Unit 8 (employability skills) has been further divided into the following subunits: career development, decision making and problem solving, work ethic, job-seeking skills, job retention skills, job advancement, technology in the workplace, life-long learning, economic education, balancing work and family, citizenship in the workplace, leadership, and entrepreneurship. Unit 9 (the forest industry) includes subunits on forest nursery operations, forest measurements, forest establishment, forest management, tree harvesting and processing, wildland fire operations, and urban forestry tree care. Unit 10 (resource conservation) contains subunits on the resource conservation industry, water quality management, mapping, nature interpretation, fish and wildlife management awareness, and groundskeeping. A list of competency builders follows each competency listed. (MN)
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This list consists of essential competencies from the following specialized OCAPs:

Forest Industry Worker

Resource Conservation
What is OCAP?

"A comprehensive and verified employer competency list will be developed and kept current for each program." This is the second objective of Imperative 3 of the Action Plan for Accelerating the Modernization of Vocational Education: Ohio's Future at Work. Ohio's Competency Analysis Profile (OCAP) lists are the Division of Vocational and Career Education's response to that objective. OCAP lists evolve from a modified DACUM process involving business, industry, labor, and community agency representatives from throughout Ohio. The OCAP process is directed by the Vocational Instructional Materials Laboratory at The Ohio State University's Center on Education and Training for Employment.

How is OCAP used?

Each OCAP contains units (with and without subunits), competencies, and competency builders that identify the occupational, academic,* and employability skills needed to enter a given occupation or occupational area. Within that outline there are three levels of items: core, advancing, and futuring. Core items identify the knowledge, skills, and attitudes essential for entry-level employment. These items will be the basis for questions on the state vocational competency tests (scheduled to begin in school year 1993-94). Advancing items (marked with one asterisk) identify the knowledge, skills, and attitudes needed to advance in a given occupation. Futuring items (marked with two asterisks) identify the knowledge, skills, and attitudes needed to enter and remain in a given occupation three to four years from now.

School districts may add as many units, subunits, competencies, and/or competency builders as desired to reflect local employment needs, trends, and specialties. Local advisory committees should be actively involved in the identification and verification of additional items. Using OCAP lists, instructors will be able to formulate their vocational courses of study and monitor competency gains via the new criterion-referenced competency testing program that will be directly tied to the competencies identified on the OCAP lists.

*Academic competencies have not been identified for all OCAPs. At a later date math, communication, and science competencies will be released.

The Employability Skills portion of this list was verified by the following employer panel:

Gary J. Corrigan, Dana Corporation, Ottawa Lake, Michigan
David Crooks, Bowling Green State University Union Food Service, Bowling Green, Ohio
Pat Doereman, Farrow's Harley-Davidson, Columbus, Ohio
William Gockenbach, Kaiser Aluminum, Heath, Ohio
Patsy Hathaway, CBS Personnel Services, Inc., Dayton, Ohio
Marlyn Harman, Marlyn Harman & Associates, Cleveland, Ohio
Thomas R. Hyldahl, Toledo Edison, Toledo, Ohio
Carol C. James, Ohio Contractors Association, Columbus, Ohio
James Mack, Chrysler Jeep Assembly, Toledo, Ohio
Rocky McCoy, Ironton-Lawrence Co. Community Action Organization, Ironton, Ohio
James Needs, Independent Crop Producer, Upper Sandusky, Ohio
Ronald Simmons, Former GM Executive, Warren Ohio
Ohio Competency Analysis Profile
Natural Resources

Unit 1: General Safety Precautions

Competency 1.0.1: Maintain safe work environment

Competency Builders:
1.0.1.1 Read and follow safety information
1.0.1.2 Organize and maintain clean and safe work area
1.0.1.3 Recognize dangers of hazardous materials
1.0.1.4 Identify hazardous materials and location of material safety data sheets (MSDSs)
1.0.1.5 Store hazardous materials according to manufacturer's specifications
1.0.1.6 Comply with shop and equipment safety rules
1.0.1.7 Identify agencies that regulate aspects of forest industry
1.0.1.8 Identify and report safety hazards
1.0.1.9 Correct safety hazards
1.0.1.10 Install, maintain, and use safety devices
1.0.1.11 Comply with general-use and restricted-use product regulations
1.0.1.12 Comply with responder first-aid and cardiopulmonary resuscitation (CPR) certification standards
1.0.1.13 Complete accident report
1.0.1.14 Recognize major environmental issues pertaining to forest industry
1.0.1.15 Monitor regulation updates*

Competency 1.0.2: Demonstrate safe work habits

Competency Builders:
1.0.2.1 Read and follow label information
1.0.2.2 Wear and maintain protective clothing and equipment
1.0.2.3 Wear appropriate clothing for job
1.0.2.4 Use safe lifting and carrying methods
1.0.2.5 Determine physical needs for specific occupational tasks
1.0.2.6 Interpret information on signs
1.0.2.7 Check fit of respirator
1.0.2.8 Check and maintain working condition of respirator
1.0.2.9 Comply with safety precautions when applying chemicals and fertilizer
1.0.2.10 Comply with safety precautions when storing chemicals and fertilizer
1.0.2.11 Follow personal cleanup procedures after handling chemicals and fertilizer
1.0.2.12 Clean up and dispose of chemicals and chemical containers according to manual specifications and/or government regulations
1.0.2.13 Comply with safety precautions when handling chemical or fertilizer spill
1.0.2.14 Develop physical fitness program to achieve level of conditioning for job

* Advancing
** Futuring
Competency 1.0.3: Operate and maintain equipment

*Competency Builders:*

1.0.3.1 Follow state, federal, and/or manufacturer's safety rules for equipment operation and maintenance
1.0.3.2 Observe and comply with safety zones around equipment
1.0.3.3 Operate equipment defensively
1.0.3.4 Interpret safety symbols
1.0.3.5 Maintain and use slow-moving-vehicle signs when operating vehicles on road
1.0.3.6 Keep riders off mobile equipment
1.0.3.7 Maintain safety devices on all equipment
1.0.3.8 Shut down and lock out/tag out power equipment before servicing
1.0.3.9 Identify and take appropriate action to correct potential equipment safety hazards
1.0.3.10 Follow manufacturer's service recommendations

Competency 1.0.4: Respond to critical incidents

*Competency Builders:*

1.0.4.1 Observe and identify hazardous situations
1.0.4.2 Report situations to supervisor
1.0.4.3 Initiate follow-through procedures
1.0.4.4 Initiate response*
1.0.4.5 Complete incident report*

Unit 2: Natural Resource Industry Operations

Competency 2.0.1: Evaluate natural resource industry

*Competency Builders:*

2.0.1.1 Identify fields of endeavor
2.0.1.2 Identify types of forest products
2.0.1.3 Recognize economic importance of industry
2.0.1.4 Recognize environmental importance of industry
2.0.1.5 Identify employment opportunities
2.0.1.6 Recognize regulatory aspects of industry
2.0.1.7 Identify continuing-education opportunities
2.0.1.8 Identify professional organizations and trade journals
2.0.1.9 Identify state licensing or certification requirements
2.0.1.10 Use proper industry terminology

Competency 2.0.2: Examine plant physiology and growth

*Competency Builders:*

2.0.2.1 Describe woody and herbaceous plants
2.0.2.2 Identify plant parts
2.0.2.3 Identify photosynthesis process
2.0.2.4 Identify functions of roots, stems, and leaves
2.0.2.5 Identify requirements for healthy plant growth
2.0.2.6 Identify taproot and fibrous root systems

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Identify differences between evergreen and deciduous plants
Identify areas of growth on individual trees
Identify physical factors affecting forest environment
Identify biological factors affecting forest environment
Identify physical and chemical characteristics of wood
Take core sample
Measure tree growth
Measure growth rate

Competency 2.0.3: Identify common trees and associated plants

Competency Builders:
Classify plants as monocots or dicots
Identify plants according to common names
Identify plants according to scientific names
Identify purpose of binomial nomenclature
Classify plants as annuals, biennials, or perennials
Identify environmental plant preferences
Classify plants according to growth habit
Identify leaf type
Identify twig features
Identify bark features
Identify types of fruits and seeds
Identify root components
Classify trees by crown position
Classify stand of timber by forest type
Classify timber stand by size class
Classify trees by economic value

Unit 3: Soil Conservation

Competency 3.0.1: Identify soil characteristics

Competency Builders:
Follow general safety precautions
Define soil horizons
Calculate land slope
Determine soil texture
Determine percent organic matter
Identify soil structure
Determine soil type
Determine soil drainage
Determine soil productivity
Determine soil management problems
Comply with government regulations and guidelines
Determine and implement management and conservation practices*

* Advancing
** Futuring
Competency 3.0.2: Conserve soil

Competency Builders:

3.0.2.1 Follow general safety precautions
3.0.2.2 Determine land capability classification
3.0.2.3 Determine erosion rates
3.0.2.4 Interpret aerial photos
3.0.2.5 Interpret soil survey maps
3.0.2.6 Identify erosion types
3.0.2.7 Identify erosion causes
3.0.2.8 Identify soil erosion control methods

Unit 4: Equipment Maintenance

Competency 4.0.1: Maintain equipment

Competency Builders:

4.0.1.1 Follow general safety precautions
4.0.1.2 Calibrate equipment
4.0.1.3 Adjust belts
4.0.1.4 Adjust chains
4.0.1.5 Inspect and report operating defects
4.0.1.6 Clean and lubricate parts
4.0.1.7 Sharpen equipment
4.0.1.8 Maintain service records

Competency 4.0.2: Maintain chain saw

Competency Builders:

4.0.2.1 Follow general safety precautions
4.0.2.2 Remove and install saw guide, bar, and chain
4.0.2.3 Adjust chain tension
4.0.2.4 Sharpen chain
4.0.2.5 Service guide bar and chain
4.0.2.6 Replace chain
4.0.2.7 Service air filter
4.0.2.8 Service spark plug
4.0.2.9 Service exhaust system
4.0.2.10 Perform spark test
4.0.2.11 Inspect fuel system

* Advancing
** Futuring
Competency 4.0.3: Maintain spraying equipment

**Competency Builders:**

4.0.3.1 Follow general safety precautions
4.0.3.2 Clean and inspect spray nozzles
4.0.3.3 Select spray nozzles
4.0.3.4 Calibrate equipment
4.0.3.5 Inspect hose and connections
4.0.3.6 Pressure-check hoses
4.0.3.7 Clean and inspect tanks
4.0.3.8 Repair hose
4.0.3.9 Troubleshoot problems

Competency 4.0.4: Service engine cooling systems

**Competency Builders:**

4.0.4.1 Follow general safety precautions
4.0.4.2 Test coolant mixture
4.0.4.3 Add coolant
4.0.4.4 Replace hoses
4.0.4.5 Adjust or replace fan belt
4.0.4.6 Inspect for leaks
4.0.4.7 Flush cooling system
4.0.4.8 Dispose of coolant
4.0.4.9 Troubleshoot problems

Competency 4.0.5: Service engine lubrication systems

**Competency Builders:**

4.0.5.1 Follow general safety precautions
4.0.5.2 Check oil level
4.0.5.3 Select oil
4.0.5.4 Change oil and oil filters
4.0.5.5 Grease or oil joints
4.0.5.6 Maintain grease fittings
4.0.5.7 Dispose of oil
4.0.5.8 Troubleshoot problems

Competency 4.0.6: Service engine fuel and air systems

**Competency Builders:**

4.0.6.1 Follow general safety precautions
4.0.6.2 Service air cleaner
4.0.6.3 Bleed diesel fuel system
4.0.6.4 Mix gas and oil for two-cycle engine
4.0.6.5 Clean and service crankcase ventilation components
4.0.6.6 Clean carburetor
4.0.6.7 Adjust small-engine carburetor
4.0.6.8 Service fuel filter assembly
4.0.6.9 Replace exhaust system components

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4.0.6.10 Clean small-engine exhaust ports
4.0.6.11 Adjust engine valves
4.0.6.12 Distinguish differences between two-cycle and four-cycle engines
4.0.6.13 Troubleshoot problems

Competency 4.0.7: Service engine electrical systems

Competency Builders:
4.0.7.1 Follow general safety precautions
4.0.7.2 Inspect and replace distributor cap and rotor
4.0.7.3 Replace spark plugs and wires
4.0.7.4 Clean spark plugs
4.0.7.5 Adjust spark plug gap
4.0.7.6 Inspect, change, and adjust breaker points
4.0.7.7 Check specific gravity of battery
4.0.7.8 Install battery
4.0.7.9 Clean and treat battery terminals, cables, and battery box
4.0.7.10 Charge battery
4.0.7.11 Replace fuses
4.0.7.12 Replace light bulbs
4.0.7.13 Jump-start vehicle
4.0.7.14 Troubleshoot problems

Competency 4.0.8: Service wheels and tires

Competency Builders:
4.0.8.1 Follow general safety precautions
4.0.8.2 Inspect tires
4.0.8.3 Check tire pressure
4.0.8.4 Inflate tires
4.0.8.5 Check and tighten lug nuts
4.0.8.6 Remove and replace wheels
4.0.8.7 Rotate tires
4.0.8.8 Check valve stems
4.0.8.9 Patch tubes
4.0.8.10 Troubleshoot problems

Competency 4.0.9: Service hydraulic systems

Competency Builders:
4.0.9.1 Follow general safety precautions
4.0.9.2 Identify reservoir
4.0.9.3 Select oil
4.0.9.4 Check and add oil
4.0.9.5 Replace oil filter
4.0.9.6 Bleed air from system
4.0.9.7 Inspect system for oil leaks
4.0.9.8 Clean couplings
4.0.9.9 Inspect and replace hoses
4.0.9.10 Troubleshoot problems

* Advancing
** Futuring
Competency 4.0.10: Clean and store equipment

Competency Builders:
- 4.0.10.1 Follow general safety precautions
- 4.0.10.2 Remove equipment from storage
- 4.0.10.3 Remove debris from equipment
- 4.0.10.4 Use steam or high-pressure wash equipment
- 4.0.10.5 Prepare engines for storage
- 4.0.10.6 Lubricate equipment
- 4.0.10.7 Drain water systems
- 4.0.10.8 Return equipment to storage

Competency 4.0.11: Weld with gas

Competency Builders:
- 4.0.11.1 Follow general safety precautions
- 4.0.11.2 Set up and adjust gas welding equipment
- 4.0.11.3 Select rod
- 4.0.11.4 Select and apply flux
- 4.0.11.5 Cut metal
- 4.0.11.6 Weld steel in horizontal positions
- 4.0.11.7 Weld steel with filler rod
- 4.0.11.8 Braze metal
- 4.0.11.9 Clean and store equipment
- 4.0.11.10 Secure and store gas cylinders

Competency 4.0.12: Weld with electric arc and MIG

Competency Builders:
- 4.0.12.1 Follow general safety precautions
- 4.0.12.2 Select welding equipment and accessories
- 4.0.12.3 Select electrode sizes and types
- 4.0.12.4 Select settings
- 4.0.12.5 Prepare metal
- 4.0.12.6 Weld steel in nonhorizontal positions
- 4.0.12.7 Weld pipe
- 4.0.12.8 Cut metal
- 4.0.12.9 Clean and store equipment
- 4.0.12.10 Weld steel in horizontal positions

Competency 4.0.13: Fabricate with metal

Competency Builders:
- 4.0.13.1 Follow general safety precautions
- 4.0.13.2 Identify types of metal
- 4.0.13.3 Design plans
- 4.0.13.4 Prepare bill of materials
- 4.0.13.5 Measure thickness of sheet metal
- 4.0.13.6 Test metal for type and hardness
- 4.0.13.7 Punch and drill metal

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4.0.13.8 Cut metal
4.0.13.9 Select thread and size for tap or die
4.0.13.10 Thread hole or rod
4.0.13.11 Grind metal
4.0.13.12 Join metal
4.0.13.13 Bend sheet metal
4.0.13.14 Store metal

Competency 4.0.14: Service belt and drive chain assemblies

Competency Builders:

4.0.14.1 Follow general safety precautions
4.0.14.2 Replace and adjust belts
4.0.14.3 Replace and adjust gear assembly
4.0.14.4 Replace and adjust chains
4.0.14.5 Replace pulleys and rollers
4.0.14.6 Clean and lubricate drive parts
4.0.14.7 Troubleshoot problems

Competency 4.0.15: Lubricate equipment

Competency Builders:

4.0.15.1 Follow general safety precautions
4.0.15.2 Identify service points
4.0.15.3 Select lubricant
4.0.15.4 Maintain grease fittings
4.0.15.5 Apply lubricant

Unit 5: Equipment Operation

Competency 5.0.1: Perform prestart functions

Competency Builders:

5.0.1.1 Follow general safety precautions
5.0.1.2 Refuel power units
5.0.1.3 Inspect working condition of lights
5.0.1.4 Select fuel
5.0.1.5 Check prestart mechanism
5.0.1.6 Flag extended materials
5.0.1.7 Turn on boat air blower
5.0.1.8 Secure equipment and materials
5.0.1.9 Troubleshoot problems

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Competency 5.0.2: Hitch equipment to power unit

*Competency Builders:*

- 5.0.2.1 Follow general safety precautions
- 5.0.2.2 Connect front-end-operated equipment
- 5.0.2.3 Connect 3-point-hitch equipment
- 5.0.2.4 Attach and detach power takeoff equipment
- 5.0.2.5 Hitch towed equipment
- 5.0.2.6 Connect hydraulic lines
- 5.0.2.7 Connect electrical hookups
- 5.0.2.8 Connect safety chains

Competency 5.0.3: Operate equipment and vehicles

*Competency Builders:*

- 5.0.3.1 Follow general safety precautions
- 5.0.3.2 Set throttle for operating conditions
- 5.0.3.3 Interpret equipment gauges
- 5.0.3.4 Start and shut down engine
- 5.0.3.5 Use hand operating signals
- 5.0.3.6 Operate manual transmission
- 5.0.3.7 Operate automatic transmission
- 5.0.3.8 Operate brake system
- 5.0.3.9 Adjust seating and steering
- 5.0.3.10 Preheat diesels
- 5.0.3.11 Park equipment and vehicles
- 5.0.3.12 Operate liftgates
- 5.0.3.13 Operate dump gates
- 5.0.3.14 Operate winch
- 5.0.3.15 Operate hydraulics
- 5.0.3.16 Operate power takeoff
- 5.0.3.17 Operate outboard motor
- 5.0.3.18 Adjust equipment for field conditions
- 5.0.3.19 Comply with all government regulations regarding equipment operation

Competency 5.0.4: Operate chain saw

*Competency Builders:*

- 5.0.4.1 Follow general safety precautions
- 5.0.4.2 Identify chain saw parts
- 5.0.4.3 Identify parts of saw chain
- 5.0.4.4 Conduct preoperative maintenance inspection
- 5.0.4.5 Start saw
- 5.0.4.6 Make overbuck cut
- 5.0.4.7 Make underbuck cut
- 5.0.4.8 Determine tree's line of fall
- 5.0.4.9 Identify use of wedges in felling operation
- 5.0.4.10 Determine escape route
- 5.0.4.11 Make notch cut
- 5.0.4.12 Make back cut

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Unit 6: Facility Construction and Maintenance

Competency 6.0.1: Use and maintain equipment

*Competency Builders:
- 6.0.1.1 Follow general safety precautions
- 6.0.1.2 Identify tools
- 6.0.1.3 Select tools
- 6.0.1.4 Read and follow operation instructions
- 6.0.1.5 Set up and adjust tools
- 6.0.1.6 Clean and lubricate tools
- 6.0.1.7 Store tools
- 6.0.1.8 Sharpen tools
- 6.0.1.9 Read measuring device
- 6.0.1.10 Recondition tools
- 6.0.1.11 Troubleshoot problems

Competency 6.0.2: Install and maintain fencing

*Competency Builders:
- 6.0.2.1 Follow general safety precautions
- 6.0.2.2 Identify fencing system options
- 6.0.2.3 Determine amount of fence required
- 6.0.2.4 Select fencing materials
- 6.0.2.5 Select posts and braces
- 6.0.2.6 Set posts and braces
- 6.0.2.7 Attach fasteners
- 6.0.2.8 Identify fasteners
- 6.0.2.9 Hang fence
- 6.0.2.10 Hang gates
- 6.0.2.11 Lay out and stretch fence
- 6.0.2.12 Remove fencing
- 6.0.2.13 Troubleshoot problems

Competency 6.0.3: Construct with wood

*Competency Builders:
- 6.0.3.1 Follow general safety precautions
- 6.0.3.2 Cut lumber to dimension
- 6.0.3.3 Assemble joints with glue
- 6.0.3.4 Cut and fit joints
- 6.0.3.5 Select and use metal fasteners
- 6.0.3.6 Cut and set ties and poles
- 6.0.3.7 Identify types of woods
- 6.0.3.8 Install and repair bracing
- 6.0.3.9 Read plan
- 6.0.3.10 Troubleshoot problems
- 6.0.3.11 Install and repair doors*

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Competency 6.0.4: Maintain electrical systems

Competency Builders:
6.0.4.1 Follow general safety precautions
6.0.4.2 Read electric meter
6.0.4.3 Replace fuses
6.0.4.4 Reset circuit breakers
6.0.4.5 Repair extension cords
6.0.4.6 Replace outlets and switches
6.0.4.7 Maintain lighting fixtures
6.0.4.8 Identify electrical fundamentals
6.0.4.9 Clean and lubricate motors*

Competency 6.0.5: Apply protective coatings

Competency Builders:
6.0.5.1 Follow general safety precautions
6.0.5.2 Determine type of coating and application
6.0.5.3 Clean and sand surface
6.0.5.4 Apply masking tape
6.0.5.5 Thin paint
6.0.5.6 Mix and apply primer coat
6.0.5.7 Apply finish coat
6.0.5.8 Apply wood preservative
6.0.5.9 Clean up equipment
6.0.5.10 Identify types and uses of coatings

Competency 6.0.6: Install and maintain water system

Competency Builders:
6.0.6.1 Follow general safety precautions
6.0.6.2 Cut pipe or tubing
6.0.6.3 Fit pipe and pipe fittings
6.0.6.4 Thread metal pipe
6.0.6.5 Identify pipe and tubing types
6.0.6.6 Install pipe and pipe fittings
6.0.6.7 Install and repair valves and faucets
6.0.6.8 Set up portable pumps
6.0.6.9 Install insulation
6.0.6.10 Install filters
6.0.6.11 Unclog pipes
6.0.6.12 Locate existing underground waterlines
6.0.6.13 Open and backfill trench line
6.0.6.14 Replace gaskets
6.0.6.15 Install sprinkler heads
6.0.6.16 Winterize system
6.0.6.17 Troubleshoot problems
6.0.6.18 Install flow-control devices*
6.0.6.19 Tap into existing waterlines*
6.0.6.20 Test and adjust sprinkler spray patterns*

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Competency 6.0.7: Operate sprinkler system

Competency Builders:
6.0.7.1 Follow general safety precautions
6.0.7.2 Program automatic timers
6.0.7.3 Adjust sprinkler patterns
6.0.7.4 Adjust water pressure
6.0.7.5 Determine sprinkler precipitation rate
6.0.7.6 Troubleshoot problems

Competency 6.0.8: Construct with concrete*

Competency Builders:
6.0.8.1 Follow general safety precautions*
6.0.8.2 Use survey level*
6.0.8.3 Select concrete materials and additives*
6.0.8.4 Select and use concrete tools*
6.0.8.5 Calculate volume of concrete to order or mix*
6.0.8.6 Excavate structure sites for concrete pouring*
6.0.8.7 Install concrete reinforcement*
6.0.8.8 Build and remove concrete forms*
6.0.8.9 Mix and pour concrete*
6.0.8.10 Finish concrete surface*
6.0.8.11 Cure concrete*
6.0.8.12 Lay block*
6.0.8.13 Lay brick*
6.0.8.14 Install edging*

Competency 6.0.9: Construct with stone*

Competency Builders:
6.0.9.1 Follow general safety precautions*
6.0.9.2 Lay stone*
6.0.9.3 Lay gravel*
6.0.9.4 Install walkways*
6.0.9.5 Construct a wall*
6.0.9.6 Set landscape stones*

Unit 7: Business Management

Competency 7.0.1: Perform general office duties

Competency Builders:
7.0.1.1 Process mail
7.0.1.2 Duplicate materials
7.0.1.3 File materials
7.0.1.4 Prepare correspondence
7.0.1.5 Prepare reports
7.0.1.6 Secure business documents

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7.0.1.7 Schedule appointments and meetings
7.0.1.8 Plan work schedules
7.0.1.9 Open and close business facility
7.0.1.10 Use telephone
7.0.1.11 Operate calculator
7.0.1.12 Use two-way radio
7.0.1.13 Operate computer
7.0.1.14 Use fax machine
7.0.1.15 Maintain service records

Competency 7.0.2: Conduct general banking procedures

Competency Builders:
7.0.2.1 Prepare bank deposit
7.0.2.2 Make bank deposit
7.0.2.3 Write check
7.0.2.4 Cash check
7.0.2.5 Balance bank statement
7.0.2.6 Balance checking account

Competency 7.0.3: Analyze marketing and sales opportunities

Competency Builders:
7.0.3.1 Determine methods of establishing a business
7.0.3.2 Select business location
7.0.3.3 Promote products and services
7.0.3.4 Market services
7.0.3.5 Prepare estimate
7.0.3.6 Develop pricing policies
7.0.3.7 Conduct sale

Competency 7.0.4: Ship merchandise

Competency Builders:
7.0.4.1 Follow general safety precautions
7.0.4.2 Record shipments
7.0.4.3 Load merchandise
7.0.4.4 Secure load
7.0.4.5 Prepare shipping documents
7.0.4.6 Arrange delivery
7.0.4.7 Determine delivery route
7.0.4.8 Process special orders
7.0.4.9 Process returns to vendors
7.0.4.10 Calculate shipping charges
7.0.4.11 Comply with government regulations

* Advancing
** Futuring
Competency 7.0.5: Keep customer accounts

- 7.0.5.1 Set up customer file
- 7.0.5.2 Identify importance of checking customer credit references
- 7.0.5.3 Post receipts
- 7.0.5.4 Balance customer accounts
- 7.0.5.5 Prepare statements
- 7.0.5.6 Prepare invoices

Competency 7.0.6: Minimize loss

- 7.0.6.1 Examine effect of theft or losses on profit
- 7.0.6.2 Identify potential loss situations
- 7.0.6.3 Maintain organized work area
- 7.0.6.4 Interpret laws regarding loss
- 7.0.6.5 Identify and follow business policy for handling instances of theft

Competency 7.0.7: Manage business finance

- 7.0.7.1 Prepare budget
- 7.0.7.2 Calculate insurance needs
- 7.0.7.3 Identify sources of business capital
- 7.0.7.4 Interpret financial statements
- 7.0.7.5 Record accounts payable
- 7.0.7.6 Record accounts receivable
- 7.0.7.7 Prepare cash flow statements
- 7.0.7.8 Calculate overhead costs

Competency 7.0.8: Control inventory

- 7.0.8.1 Follow safety precautions
- 7.0.8.2 Organize storage area
- 7.0.8.3 Organize sales area
- 7.0.8.4 Conduct physical inventory
- 7.0.8.5 Determine quantity of bulk items
- 7.0.8.6 Maintain inventory records

Competency 7.0.9: Order merchandise

- 7.0.9.1 Determine when to order
- 7.0.9.2 Select vendors
- 7.0.9.3 Use vendor discounts
- 7.0.9.4 Calculate shipping charges
- 7.0.9.5 Determine amount of storage needed

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Competency 7.0.10: Receive merchandise

**Competency Builders:**

- 7.0.10.1 Follow general safety precautions
- 7.0.10.2 Verify order
- 7.0.10.3 Unpack merchandise
- 7.0.10.4 Interpret packing slips and invoices
- 7.0.10.5 Check merchandise for shipping discrepancies
- 7.0.10.6 Inspect merchandise for damage
- 7.0.10.7 Distribute merchandise to designated location

Competency 7.0.11: Perform public relations work

**Competency Builders:**

- 7.0.11.1 Explain forestry objectives
- 7.0.11.2 Prepare reports
- 7.0.11.3 Prepare literature
- 7.0.11.4 Obtain and interpret forestry information
- 7.0.11.5 Write news releases
- 7.0.11.6 Describe interaction with government agencies and other organizations

**Unit 8: Employability Skills**

**Subunit 8.1: Career Development**

**Competency 8.1.1: Investigate career options**

**Competency Builders:**

- 8.1.1.1 Determine interests and aptitudes
- 8.1.1.2 Identify career options
- 8.1.1.3 Research occupations matching interests and aptitudes
- 8.1.1.4 Select career(s) that best match(es) interests and aptitudes
- 8.1.1.5 Identify advantages and disadvantages of career options, including nontraditional careers
- 8.1.1.6 Assess differences in wages, annual incomes, and job opportunities based on geographic location
- 8.1.1.7 Develop a career plan

**Competency 8.1.2: Analyze potential barriers to employment**

**Competency Builders:**

- 8.1.2.1 Identify common barriers to employment
- 8.1.2.2 Describe strategies to overcome employment barriers
Unit 8: Employability Skills
Subunit 8.2: Decision Making and Problem Solving

Competency 8.2.1: Apply decision-making techniques in the workplace

*Competency Builders:*
8.2.1.1 Identify the decision to be made
8.2.1.2 Compare alternatives
8.2.1.3 Determine consequences of each alternative
8.2.1.4 Make decisions based on values and goals
8.2.1.5 Evaluate the decision made

Competency 8.2.2: Apply problem-solving techniques in the workplace

*Competency Builders:*
8.2.2.1 Diagnose the problem and its causes
8.2.2.2 Identify alternatives and their consequences in relation to the problem
8.2.2.3 Examine multicultural and nonsexist dimensions of problem solving
8.2.2.4 Utilize resources to explore possible solutions to the problem
8.2.2.5 Compare and contrast the advantages and disadvantages of each solution
8.2.2.6 Determine appropriate action
8.2.2.7 Evaluate results

Unit 8: Employability Skills
Subunit 8.3: Work Ethic

Competency 8.3.1: Evaluate the relationship of self-esteem to work ethic

*Competency Builders:*
8.3.1.1 Identify special characteristics and abilities in self and others
8.3.1.2 Identify internal and external factors that affect self-esteem

Competency 8.3.2: Analyze the relationship of personal values and goals to work ethic both in and out of the workplace

*Competency Builders:*
8.3.2.1 Distinguish between values and goals
8.3.2.2 Determine the importance of values and goals
8.3.2.3 Evaluate how values affect goals
8.3.2.4 Identify short-term and long-term goals
8.3.2.5 Prioritize personal goals
8.3.2.6 Describe how personal values are reflected in work ethic
8.3.2.7 Describe how interactions in the workplace affect personal work ethic
8.3.2.8 Examine how life changes affect personal work ethic

Competency 8.3.3: Demonstrate work ethic

*Competency Builders:*
8.3.3.1 Examine factors that influence work ethic
8.3.3.2 Exhibit characteristics that reflect an appropriate work ethic

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Unit 8: Employability Skills
Subunit 8.4: Job-Seeking Skills

Competency 8.4.1: Prepare for employment

Competency Builders:
8.4.1.1 Identify traditional and nontraditional employment sources
8.4.1.2 Utilize employment sources
8.4.1.3 Research job opportunities, including nontraditional careers
8.4.1.4 Interpret equal employment opportunity laws
8.4.1.5 Explain the critical importance of personal appearance, hygiene, and demeanor throughout the employment process
8.4.1.6 Prepare for generic employment tests and those specific to an occupation/organization

Competency 8.4.2: Design a résumé

Competency Builders:
8.4.2.1 Identify personal strengths and weaknesses
8.4.2.2 List skills and/or abilities, career objective(s), accomplishments/achievements, educational background, and work experience
8.4.2.3 Demonstrate legible written communication skills using correct grammar, spelling, and concise wording
8.4.2.4 Complete résumé using various formats
8.4.2.5 Secure references

Competency 8.4.3: Complete and process job application forms

Competency Builders:
8.4.3.1 Explain the importance of an application form
8.4.3.2 Identify ways to obtain job application forms
8.4.3.3 Describe methods for handling illegal questions on job application forms
8.4.3.4 Demonstrate legible written communication skills using correct grammar, spelling, and concise wording
8.4.3.5 Return application to proper person, request interview, and follow up

Competency 8.4.4: Demonstrate interviewing skills

Competency Builders:
8.4.4.1 Investigate interview environment and procedures
8.4.4.2 Explain the critical importance of personal appearance, hygiene, and demeanor
8.4.4.3 Demonstrate question and answer techniques
8.4.4.4 Demonstrate methods for handling difficult and/or illegal interview questions
Competency 8.4.5: Secure employment

**Competency Builders:**

8.4.5.1 Identify present and future employment opportunities within an occupation/organization
8.4.5.2 Research the organization/company
8.4.5.3 Use follow-up techniques to enhance employment potential
8.4.5.4 Compare and evaluate job offers

**Unit 8: Employability Skills**

**Subunit 8.5: Job Retention Skills**

Competency 8.5.1: Analyze the organizational structure of the workplace

**Competency Builders:**

8.5.1.1 Identify and evaluate employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
8.5.1.2 Be aware of and obey all company policies and procedures
8.5.1.3 Examine the role/relationship between employee and employer
8.5.1.4 Recognize opportunities for advancement and reasons for termination

Competency 8.5.2: Maintain positive relations with others

**Competency Builders:**

8.5.2.1 Exhibit appropriate work habits and attitude
8.5.2.2 Identify behaviors to establish successful working relationships
8.5.2.3 Cooperate and compromise through teamwork and group participation
8.5.2.4 Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age

**Unit 8: Employability Skills**

**Subunit 8.6: Job Advancement**

Competency 8.6.1: Analyze opportunities for personal and career growth

**Competency Builders:**

8.6.1.1 Determine opportunities within an occupation/organization
8.6.1.2 Compare and contrast other opportunities
8.6.1.3 List benefits of job advancement
8.6.1.4 Evaluate factors involved when assuming a new position within or outside an occupation/organization

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Competency 8.6.2: Exhibit characteristics needed for advancement

**Competency Builders:**

- 8.6.2.1 Display a positive attitude
- 8.6.2.2 Demonstrate knowledge of a position
- 8.6.2.3 Perform quality work
- 8.6.2.4 Adapt to changing situations and technology
- 8.6.2.5 Demonstrate capability for different positions
- 8.6.2.6 Participate in continuing education/training programs
- 8.6.2.7 Respect, accept, and work with ALL individuals in the workplace

**Unit 8: Employability Skills**

**Subunit 8.7: Technology in the Workplace**

**Competency 8.7.1:** Assess the impact of technology in the workplace

**Competency Builders:**

- 8.7.1.1 Cite how past business/industry practices have influenced present business/industry processes
- 8.7.1.2 Investigate the use of technology in the workplace
- 8.7.1.3 Analyze how present skills can be applied to learning new technologies

**Competency 8.7.2:** Use a variety of technological applications

**Competency Builders:**

- 8.7.2.1 Explore basic mathematical, scientific, computer, and technological principles
- 8.7.2.2 Use technology to accomplish assigned tasks
- 8.7.2.3 Create solutions to problems using technical means

**Unit 8: Employability Skills**

**Subunit 8.8: Lifelong Learning**

**Competency 8.8.1:** Apply lifelong learning to individual situations

**Competency Builders:**

- 8.8.1.1 Define lifelong learning
- 8.8.1.2 Identify factors that cause the need for lifelong learning

**Competency 8.8.2:** Adapt to change

**Competency Builders:**

- 8.8.2.1 Analyze the effects of change
- 8.8.2.2 Identify reasons why goals change
- 8.8.2.3 Describe the importance of flexibility when reevaluating goals
- 8.8.2.4 Evaluate the need for continuing education/training

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Unit 8: Employability Skills
Subunit 8.9: Economic Education

Competency 8.9.1: Analyze global enterprise system

Competency Builders:
8.9.1.1 Identify characteristics of various enterprise systems
8.9.1.2 Examine the relationship between competition, risk, and profit
8.9.1.3 Illustrate how supply and demand influence price

Competency 8.9.2: Evaluate personal money management

Competency Builders:
8.9.2.1 Describe the need for personal management records
8.9.2.2 Identify methods of taxation
8.9.2.3 Analyze how credit affects financial security
8.9.2.4 Compare types and methods of investments
8.9.2.5 Prepare a personal budget
8.9.2.6 Be an informed and responsible consumer
8.9.2.7 Analyze the effects of advertising on the consumer

Unit 8: Employability Skills
Subunit 8.10: Balancing Work and Family

Competency 8.10.1: Analyze the effects of family on work

Competency Builders:
8.10.1.1 Recognize how family values, goals, and priorities are reflected in the workplace
8.10.1.2 Identify present and future family structures and responsibilities
8.10.1.3 Describe personal and family roles
8.10.1.4 Analyze concerns of working parent(s)
8.10.1.5 Examine how family responsibilities can conflict with work
8.10.1.6 Resolve family-related conflicts
8.10.1.7 Explain how to use support systems/community resources to help resolve family-related conflicts

Competency 8.10.2: Analyze the effects of work on family

Competency Builders:
8.10.2.1 Identify responsibilities associated with paid and nonpaid work
8.10.2.2 Compare the advantages and disadvantages of multiple incomes
8.10.2.3 Explain how work can conflict with family responsibilities
8.10.2.4 Explain how work-related stress can affect families
8.10.2.5 Identify family support systems and resources

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Unit 8: Employability Skills
Subunit 8.11: Citizenship in the Workplace

Competency 8.11.1: Exercise the rights and responsibilities of citizenship in the workplace

Competency Builders:
8.11.1.1 Identify the basic rights and responsibilities of citizenship
8.11.1.2 Examine the history and contributions of all racial, ethnic, and cultural groups

Competency 8.11.2: Cooperate with others in the workplace

Competency Builders:
8.11.2.1 Identify situations in which compromise is necessary
8.11.2.2 Examine how individuals from various backgrounds contribute to work-related situations
8.11.2.3 Demonstrate initiative to facilitate cooperation
8.11.2.4 Give and receive constructive criticism to enhance cooperation

Unit 8: Employability Skills
Subunit 8.12: Leadership

Competency 8.12.1: Evaluate leadership styles appropriate for the workplace

Competency Builders:
8.12.1.1 Identify characteristics of effective leaders
8.12.1.2 Compare leadership styles
8.12.1.3 Demonstrate effective delegation skills
8.12.1.4 Identify opportunities to lead in the workplace

Competency 8.12.2: Demonstrate effective teamwork skills

Competency Builders:
8.12.2.1 Identify the responsibilities of a valuable group member
8.12.2.2 Exhibit open-mindedness
8.12.2.3 Identify methods of involving each member of a team
8.12.2.4 Contribute to the efficiency and success of a group
8.12.2.5 Determine ways to motivate others
Competency 8.12.3: Utilize effective communication skills

Competency Builders:
8.12.3.1 Identify the importance of listening
8.12.3.2 Demonstrate assertive communication
8.12.3.3 Recognize the importance of verbal and nonverbal cues and messages
8.12.3.4 Analyze written material
8.12.3.5 Prepare written material
8.12.3.6 Give and receive feedback
8.12.3.7 Articulate thoughts
8.12.3.8 Use appropriate language

Unit 8: Employability Skills
Subunit 8.13: Entrepreneurship

Competency 8.13.1: Evaluate the role of small business in the economy
Competency Builders:
8.13.1.1 Identify the benefits of small business to a community
8.13.1.2 Analyze opportunities for small business in a community

Competency 8.13.2: Examine considerations of starting a business
Competency Builders:
8.13.2.1 Research a business idea
8.13.2.2 Compare various ways to become a small business owner
8.13.2.3 Investigate factors to consider in financing a new business
8.13.2.4 Evaluate entrepreneurship as a career option

Unit 9: Forest Industry
Subunit 9.1: Forest Nursery Operations

Competency 9.1.1: Prepare nursery site
Competency Builders:
9.1.1.1 Follow general safety precautions
9.1.1.2 Identify features to consider in selecting site
9.1.1.3 Identify factors involved in planning propagation facilities
9.1.1.4 Till and cultivate site
9.1.1.5 Identify basics of greenhouse structures
9.1.1.6 Recognize purpose and function of greenhouse
Competency 9.1.2: Prepare for propagation

*Competency Builders:*

- 9.1.2.1 Follow general safety precautions
- 9.1.2.2 Identify asexual and sexual plant propagation methods
- 9.1.2.3 Collect and/or obtain seeds
- 9.1.2.4 Take cuttings
- 9.1.2.5 Interpret plant and seed tag information
- 9.1.2.6 Match plant requirements to environmental conditions
- 9.1.2.7 Calculate percent germination
- 9.1.2.8 Treat seeds
- 9.1.2.9 Identify factors for determining planting rate
- 9.1.2.10 Identify factors for determining planting depth
- 9.1.2.11 Identify factors for determining planting time
- 9.1.2.12 Select containers
- 9.1.2.13 Sterilize equipment, containers, and seedbed
- 9.1.2.14 Apply propagation media principles

Competency 9.1.3: Propagate tree seedlings and cuttings

*Competency Builders:*

- 9.1.3.1 Follow general safety precautions
- 9.1.3.2 Stratify seeds
- 9.1.3.3 Plant seeds
- 9.1.3.4 Apply rooting hormone
- 9.1.3.5 Stick cuttings
- 9.1.3.6 Set plant spacing

Competency 9.1.4: Handle and care for seedlings and cuttings

*Competency Builders:*

- 9.1.4.1 Follow general safety precautions
- 9.1.4.2 Thin seedlings
- 9.1.4.3 Transplant seedlings and plugs
- 9.1.4.4 Transplant cuttings
- 9.1.4.5 Apply growth-regulating compounds
- 9.1.4.6 Prune roots
- 9.1.4.7 Lift seedlings and cuttings
- 9.1.4.8 Package plants
- 9.1.4.9 Ship plants
- 9.1.4.10 Keep nursery production records
- 9.1.4.11 Identify problems

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Competency 9.1.5: Regulate nursery environment

Competency Builders:
9.1.5.1 Follow general safety precautions
9.1.5.2 Install shade cloth
9.1.5.3 Construct lath
9.1.5.4 Use light meters
9.1.5.5 Control humidity
9.1.5.6 Control temperature
9.1.5.7 Control moisture
9.1.5.8 Determine fertilizer levels

Unit 9: Forest Industry
Subunit 9.2: Forest Measurements

Competency 9.2.1: Interpret maps

Competency Builders:
9.2.1.1 Interpret information on topographic map
9.2.1.2 Interpret map legends
9.2.1.3 Determine distance
9.2.1.4 Identify sources of maps
9.2.1.5 Identify meridians and parallels
9.2.1.6 Interpret deed
9.2.1.7 Locate administrative land divisions
9.2.1.8 Identify what public records are available
9.2.1.9 Use United States Public Land Survey System
9.2.1.10 Determine direction
9.2.1.11 Identify natural features
9.2.1.12 Identify man-made features
9.2.1.13 Triangulate location
9.2.1.14 Orient map to true north
9.2.1.15 Use compass
9.2.1.16 Use city or area road map
9.2.1.17 Recognize use of aerial photographs
9.2.1.18 Interpret aerial photographs*
9.2.1.19 Measure horizontal distances*
9.2.1.20 Measure vertical distances*
9.2.1.21 Take area measurements*
9.2.1.22 Determine boundary lines*
9.2.1.23 Locate logging and access roads*
9.2.1.24 Locate dams, impoundments, ponds, and recreational-use areas*
9.2.1.25 Calculate slope*
9.2.1.26 Determine magnetic declination*
9.2.1.27 Recognize Best Management Practices (BMP)*

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Competency 9.2.2: Cruise timber

**Competency Builders:**

9.2.2.1 Follow general safety precautions  
9.2.2.2 Select cruise type  
9.2.2.3 Mark timber  
9.2.2.4 Evaluate soil conditions  
9.2.2.5 Identify topographic features  
9.2.2.6 Identify desirable tree species  
9.2.2.7 Identify symptoms of internal tree problems  
9.2.2.8 Identify symptoms of external tree problems  
9.2.2.9 Measure tree height  
9.2.2.10 Measure tree diameter  
9.2.2.11 Measure basal area  
9.2.2.12 Calculate number of trees in stand  
9.2.2.13 Calculate stand volume in board footage and weight using Doyle and international rules  
9.2.2.14 Calculate stumpage value  
9.2.2.15 Calculate number of logs and sticks in tree  
9.2.2.16 Calculate total board footage  
9.2.2.17 Record measurements  
9.2.2.18 Prepare inventory reports  
9.2.2.19 Prepare stand analysis data

Competency 9.2.3: Scale pulpwood and sawlogs

**Competency Builders:**

9.2.3.1 Follow general safety precautions  
9.2.3.2 Measure length and diameter  
9.2.3.3 Estimate board footage using Doyle and international rules  
9.2.3.4 Calculate volume of pulpwood  
9.2.3.5 Calculate volume of sawlogs using various methods  
9.2.3.6 Scale pulpwood by weight  
9.2.3.7 Scale logs by computer*

Competency 9.2.4: Grade sawlogs

**Competency Builders:**

9.2.4.1 Follow general safety precautions  
9.2.4.2 Observe defects  
9.2.4.3 Identify desirable length  
9.2.4.4 Identify clear faces  
9.2.4.5 Identify log species

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Competency 9.2.5: Conduct survey*

Competency Builders:
9.2.5.1 Follow general safety precautions*
9.2.5.2 Clear brush*
9.2.5.3 Transport survey instruments*
9.2.5.4 Set up survey instruments*
9.2.5.5 Perform long-distance survey approximations*
9.2.5.6 Determine elevation*
9.2.5.7 Measure inaccessible lines*

Unit 9: Forest Industry
Subunit 9.3: Forest Establishment

Competency 9.3.1: Prepare for plant and soil testing

Competency Builders:
9.3.1.1 Collect soil samples
9.3.1.2 Prepare soil samples
9.3.1.3 Take plant samples
9.3.1.4 Prepare plant samples
9.3.1.5 Interpret test results

Competency 9.3.2: Prepare to plant trees

Competency Builders:
9.3.2.1 Follow general safety precautions
9.3.2.2 Calculate planting rate
9.3.2.3 Transport seedlings
9.3.2.4 Care for and store seedlings
9.3.2.5 Select planting site for urban and forest environment*
9.3.2.6 Define planting areas*
9.3.2.7 Plan access roads*
9.3.2.8 Plan soil erosion control*
9.3.2.9 Procure planting stock*

Competency 9.3.3: Plant trees

Competency Builders:
9.3.3.1 Follow general safety precautions
9.3.3.2 Protect planting stock
9.3.3.3 Prepare planting location in urban and forest environments
9.3.3.4 Determine factors that affect plant survival
9.3.3.5 Line out planting location
9.3.3.6 Determine planting procedure
9.3.3.7 Plant trees in urban and forest environments
9.3.3.8 Keep planting records
9.3.3.9 Provide care and maintenance for newly planted trees
9.3.3.10 Determine reclamation replant practices*

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Competency 9.3.4: Evaluate watershed management*

Competency Builders:
9.3.4.1 Control flood runoff*
9.3.4.2 Maintain soil stability*
9.3.4.3 Improve vegetative cover*
9.3.4.4 Recognize lands that may be classed as wetlands*

Unit 9: Forest Industry
Subunit 9.4: Forest Management

Competency 9.4.1: Improve timber stand

Competency Builders:
9.4.1.1 Follow general safety precautions
9.4.1.2 Describe process and function of controlled burning
9.4.1.3 Remove undesirable tree and brush species
9.4.1.4 Thin trees
9.4.1.5 Perform cleaning operations
9.4.1.6 Perform crop tree release
9.4.1.7 Conduct improvement cutting
9.4.1.8 Girdle trees
9.4.1.9 Prune trees

Competency 9.4.2: Fertilize trees

Competency Builders:
9.4.2.1 Follow general safety precautions
9.4.2.2 Identify symptoms of nutrient deficiency
9.4.2.3 Select soil amendments
9.4.2.4 Interpret manufacturer's fertilization-rate charts
9.4.2.5 Interpret fertilizer labels
9.4.2.6 Determine amount of fertilizer and soil amendments to apply
9.4.2.7 Select application method
9.4.2.8 Calibrate fertilizer application equipment
9.4.2.9 Mix fertilizer solutions
9.4.2.10 Apply liquid fertilizer
9.4.2.11 Apply dry fertilizer
9.4.2.12 Recognize symptoms of fertilizer injury
9.4.2.13 Maintain equipment
9.4.2.14 Keep fertilizer application records
9.4.2.15 Identify injection method for applying micronutrients to trees in urban forestry
9.4.2.16 Determine nutrient requirements*
9.4.2.17 Develop fertilization schedule*

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Competency 9.4.3: Apply pest-control principles

Competency Builders:
- 9.4.3.1 Follow general safety precautions
- 9.4.3.2 Classify insects according to feeding habits
- 9.4.3.3 Recognize various pest damage
- 9.4.3.4 Estimate pest population numbers
- 9.4.3.5 Calculate area to be covered
- 9.4.3.6 Prepare maps of infested areas
- 9.4.3.7 Evaluate chemical/cultural/biological control options
- 9.4.3.8 Prepare pest damage samples
- 9.4.3.9 Identify common insects, diseases, and weeds*
- 9.4.3.10 Identify common vertebrate pests*
- 9.4.3.11 Assess degree of damage*
- 9.4.3.12 Determine when controls are needed*
- 9.4.3.13 Select control methods*

Competency 9.4.4: Apply chemical pest-control treatments

Competency Builders:
- 9.4.4.1 Follow general safety precautions
- 9.4.4.2 Comply with information on chemical labels
- 9.4.4.3 Calibrate application equipment
- 9.4.4.4 Mix chemicals
- 9.4.4.5 Use application equipment
- 9.4.4.6 Set out bait
- 9.4.4.7 Clean equipment
- 9.4.4.8 Recognize chemical injury
- 9.4.4.9 Maintain application record
- 9.4.4.10 Comply with government regulations
- 9.4.4.11 Follow integrated pest management (IPM) practices
- 9.4.4.12 Identify injection methods for applying pesticides to trees in urban environments
- 9.4.4.13 Comply with information on compatibility charts*
- 9.4.4.14 Select chemicals*
- 9.4.4.15 Assess treatment results*

Competency 9.4.5: Apply nonchemical pest control

Competency Builders:
- 9.4.5.1 Follow general safety precautions
- 9.4.5.2 Mow fields
- 9.4.5.3 Spread mulches
- 9.4.5.4 Till for weed control
- 9.4.5.5 Plan livestock grazing
- 9.4.5.6 Identify pest-resistant species
- 9.4.5.7 Recognize biological control products or processes
- 9.4.5.8 Follow IPM practices
- 9.4.5.9 Plant cover crops*

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Competency 9.4.6: Shear Christmas trees

**Competency Builders:**

- 9.4.6.1 Follow general safety precautions
- 9.4.6.2 Identify purpose and response of shearing by species
- 9.4.6.3 Remove multiple leaders
- 9.4.6.4 Shear lateral branches
- 9.4.6.5 Train terminal leaders
- 9.4.6.6 Identify shearing equipment
- 9.4.6.7 Use motorized tools in shearing process
- 9.4.6.8 Maintain shearing equipment
- 9.4.6.9 Put handles on trees (i.e., remove lower branches)
- 9.4.6.10 Select type of tree taper*
- 9.4.6.11 Schedule shearing time according to species*

**Unit 9: Forest Industry**

**Subunit 9.5: Tree Harvesting and Processing**

**Competency 9.5.1: Harvest nonforest trees**

**Competency Builders:**

- 9.5.1.1 Follow general safety precautions
- 9.5.1.2 Comply with tree inspection and movement regulations
- 9.5.1.3 Dye trees
- 9.5.1.4 Dig, ball, and burlap trees
- 9.5.1.5 Cut trees
- 9.5.1.6 Tie trees
- 9.5.1.7 Bale trees
- 9.5.1.8 Identify industry standards regarding tree harvesting
- 9.5.1.9 Store trees
- 9.5.1.10 Identify options of machinery for harvesting
- 9.5.1.11 Identify market demand*
- 9.5.1.12 Schedule harvest*

**Competency 9.5.2: Harvest forest trees**

**Competency Builders:**

- 9.5.2.1 Follow general safety precautions*
- 9.5.2.2 Plan harvest time*
- 9.5.2.3 Identify access-road requirements*
- 9.5.2.4 Design stream crossings*
- 9.5.2.5 Plan erosion control*
- 9.5.2.6 Recommend logging methods*
- 9.5.2.7 Fell tree*
- 9.5.2.8 Limb tree*
- 9.5.2.9 Cut tree into log lengths*
- 9.5.2.10 Chip tree parts*
- 9.5.2.11 Identify Best Management Practices (BMP)*
- 9.5.2.12 Identify reclamation practices*

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Competency 9.5.3: Haul wood products*

* Competency Builders:
  9.5.3.1 Follow general safety precautions*
  9.5.3.2 Select vehicle*
  9.5.3.3 Load logs*
  9.5.3.4 Determine delivery route*
  9.5.3.5 Comply with federal and state laws and regulations*
  9.5.3.6 Prepare transport records*

Competency 9.5.4: Operate sawmill*

* Competency Builders:
  9.5.4.1 Follow general safety precautions*
  9.5.4.2 Identify sawmill types*
  9.5.4.3 Use hardwood sawing techniques*
  9.5.4.4 Use softwood sawing techniques*
  9.5.4.5 Identify knot types*
  9.5.4.6 Identify log defects*
  9.5.4.7 Identify basic lumber-grading techniques*
  9.5.4.8 Identify special-use log markets*
  9.5.4.9 Use common sawmill equipment*
  9.5.4.10 Identify sawmill by-product uses*

Competency 9.5.5: Season lumber*

* Competency Builders:
  9.5.5.1 Follow general safety precautions*
  9.5.5.2 Estimate expected shrinkage*
  9.5.5.3 Choose site*
  9.5.5.4 Build foundation*
  9.5.5.5 Stack lumber*
  9.5.5.6 Use stickers*
  9.5.5.7 Pile lumber*
  9.5.5.8 Protect piles from weather*
  9.5.5.9 Identify lumber defects*
  9.5.5.10 Identify techniques to protect and maintain quality of lumber*
  9.5.5.11 Identify causes of seasoning defects*
  9.5.5.12 Identify drying techniques*

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Unit 9: Forest Industry
Subunit 9.6: Wildland Fire Operations

Competency 9.6.1: Practice wildland fire safety

Competency Builders:
9.6.1.1 Follow general safety precautions
9.6.1.2 Identify safety areas
9.6.1.3 Use fire shelter
9.6.1.4 Use protective equipment
9.6.1.5 Recognize situations producing explosive fire behavior
9.6.1.6 Identify actions for each of the letters in FIRE ORDERS
9.6.1.7 Identify Watch Out situations
9.6.1.8 Plan escape route*
9.6.1.9 Recognize need for Incident Command System (ICS)*

Competency 9.6.2: Suppress fires

Competency Builders:
9.6.2.1 Follow general safety precautions
9.6.2.2 Identify items that influence fire behavior
9.6.2.3 Construct control handline
9.6.2.4 Recognize man-made and natural barriers to fires
9.6.2.5 Recognize threats to control lines
9.6.2.6 Recognize types of attack
9.6.2.7 Identify fire triangle
9.6.2.8 Identify parts of fire
9.6.2.9 Identify and maintain hand tools
9.6.2.10 Recognize wildland-urban interface problems*

Competency 9.6.3: Practice mop-up operations

Competency Builders:
9.6.3.1 Follow general safety precautions
9.6.3.2 Extinguish burning materials
9.6.3.3 Locate hot spots
9.6.3.4 Use cold trailing procedures
9.6.3.5 Identify safety hazards

Competency 9.6.4: Identify weather conditions

Competency Builders:
9.6.4.1 Observe weather conditions
9.6.4.2 Use weather-recording instruments
9.6.4.3 Record weather measurements

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Competency 9.6.5: Manage watering of fires*  

Competency Builders:
- 9.6.5.1 Follow general safety precautions*  
- 9.6.5.2 Design a hose-lay*  
- 9.6.5.3 Use hose-lay appliances*  
- 9.6.5.4 Inspect hoses and appliances*  
- 9.6.5.5 Set up pump chase*  
- 9.6.5.6 Set up collapsible tank*  
- 9.6.5.7 Add surfactant to water source*  
- 9.6.5.8 Practice water conservation*  
- 9.6.5.9 Retrieve hose and accessories*  
- 9.6.5.10 Prepare hose for transport*  
- 9.6.5.11 Make and deploy hose packs*  
- 9.6.5.12 Add to or replace charged hose-lay section*  
- 9.6.5.13 Select and adjust pressure*  
- 9.6.5.14 Use hand signals*  
- 9.6.5.15 Identify foam application techniques*  
- 9.6.5.16 Set up and operate pump*  

Unit 9: Forest Industry  
Subunit 9.7: Urban Forestry Tree Care  

Competency 9.7.1: Prune trees  

Competency Builders:
- 9.7.1.1 Follow general safety precautions  
- 9.7.1.2 Identify and use pruning equipment  
- 9.7.1.3 Maintain pruning equipment  
- 9.7.1.4 Use proper pruning techniques  
- 9.7.1.5 Identify effects of proper and improper pruning  

Competency 9.7.2: Climb trees  

Competency Builders:
- 9.7.2.1 Follow general safety precautions  
- 9.7.2.2 Identify and use tree-climbing equipment  
- 9.7.2.3 Tie common knots  
- 9.7.2.4 Use ascending and descending techniques  
- 9.7.2.5 Use working techniques in tree  
- 9.7.2.6 Identify liability issues involved in tree climbing  

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Competency 9.7.3: Remove tree parts

**Competency Builders:**

- 9.7.3.1 Follow general safety precautions
- 9.7.3.2 Make removal cuts
- 9.7.3.3 Use various lowering techniques (e.g., rigging)
- 9.7.3.4 Estimate weight of tree parts by species
- 9.7.3.5 Make finish cuts
- 9.7.3.6 Identify hazardous tree conditions
- 9.7.3.7 Describe stump removal techniques

Competency 9.7.4: Dispose of debris

**Competency Builders:**

- 9.7.4.1 Follow general safety precautions
- 9.7.4.2 Operate and maintain chipper
- 9.7.4.3 Operate and maintain truck
- 9.7.4.4 Load tree parts
- 9.7.4.5 Describe alternative methods of debris disposal
- 9.7.4.6 Comply with government regulations regarding disposal of tree parts
- 9.7.4.7 Organize brush for disposal

**Unit 10: Resource Conservation**

**Subunit 10.1: Resource Conservation Industry**

Competency 10.1.1: Follow legal regulations

**Competency Builders:**

- 10.1.1.1 Follow general safety precautions
- 10.1.1.2 Identify and explain boating regulations
- 10.1.1.3 Identify and explain fishing regulations
- 10.1.1.4 Identify and explain littering regulations
- 10.1.1.5 Identify and explain swimming regulations
- 10.1.1.6 Post legal regulations
- 10.1.1.7 Identify and explain park regulations
- 10.1.1.8 Identify and explain game laws
- 10.1.1.9 Identify and explain stream, lake, pond, and groundwater laws
- 10.1.1.10 Identify and explain outdoor burning regulations

Competency 10.1.2: Identify and classify common animal species

**Competency Builders:**

- 10.1.2.1 Follow general safety precautions
- 10.1.2.2 Identify mammals and explain their life histories
- 10.1.2.3 Identify birds and explain their life histories
- 10.1.2.4 Identify reptiles and explain their life histories
- 10.1.2.5 Identify amphibians and explain their life histories
- 10.1.2.6 Identify invertebrates and explain their life histories
- 10.1.2.7 Identify fish and explain their life histories

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Competency 10.1.3: Examine interdependency of ecosystem

Competency Builders:
10.1.3.1 Identify relationship between communities of ecosystem
10.1.3.2 Identify major plant biomes
10.1.3.3 Differentiate renewable and nonrenewable resources
10.1.3.4 Identify communities

Unit 10: Resource Conservation
Subunit 10.2: Water Quality Management

Competency 10.2.1: Identify and assess stream dynamics

Competency Builders:
10.2.1.1 Follow general safety precautions
10.2.1.2 Identify a watershed area
10.2.1.3 Identify disturbances and destructive forces
10.2.1.4 Determine stream profile
10.2.1.5 Evaluate stream corridor improvement
10.2.1.6 Identify nonpoint source pollution
10.2.1.7 Measure stream velocity*
10.2.1.8 Measure stream volume*

Competency 10.2.2: Determine water quality parameters

Competency Builders:
10.2.2.1 Follow general safety precautions
10.2.2.2 Measure turbidity
10.2.2.3 Measure pH
10.2.2.4 Measure temperature
10.2.2.5 Measure dissolved oxygen
10.2.2.6 Profile dissolved oxygen and temperature
10.2.2.7 Survey macroinvertebrates
10.2.2.8 Identify pollution sources
10.2.2.9 Identify water quality indicators
10.2.2.10 Measure alkalinity
10.2.2.11 Measure residue content*
10.2.2.12 Measure fecal coliform count*
10.2.2.13 Measure phosphorus level*
10.2.2.14 Measure nitrate level*
10.2.2.15 Measure sulfate level*
10.2.2.16 Measure chloride level*
10.2.2.17 Determine water quality index*
10.2.2.18 Interpret water test results*

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Unit 10: Resource Conservation
Subunit 10.3: Mapping

Competency 10.3.1: Conduct a basic survey

Competency Builders:
10.3.1.1 Follow general safety precautions
10.3.1.2 Measure distance
10.3.1.3 Use and maintain tripod level
10.3.1.4 Read target rod
10.3.1.5 Use and interpret hand signals
10.3.1.6 Record field notes
10.3.1.7 Determine allowable error
10.3.1.8 Calculate acreage
10.3.1.9 Draw a field layout
10.3.1.10 Locate bench mark*
10.3.1.11 Take backsight reading*
10.3.1.12 Take foresight reading*
10.3.1.13 Perform bench level circuit survey*

Competency 10.3.2: Interpret topographic maps

Competency Builders:
10.3.2.1 Follow general safety precautions
10.3.2.2 Identify legal descriptions
10.3.2.3 Identify map symbols
10.3.2.4 Interpret map legend
10.3.2.5 Determine true and magnetic north
10.3.2.6 Draw a profile using contour lines
10.3.2.7 Measure distance
10.3.2.8 Identify terrain type
10.3.2.9 Interpret elevation
10.3.2.10 Identify direction of water flow
10.3.2.11 Determine area

Competency 10.3.3: Orient to field position

Competency Builders:
10.3.3.1 Follow general safety precautions
10.3.3.2 Follow compass course
10.3.3.3 Locate objects in field
10.3.3.4 Orient compass to topographic maps
10.3.3.5 Adjust compass to local declination
10.3.3.6 Use back bearings
10.3.3.7 Pace out distances
10.3.3.8 Determine area
10.3.3.9 Measure distance
10.3.3.10 Draw field layout
10.3.3.11 Draw metes and bounds*

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Unit 10: Resource Conservation
Subunit 10.4: Nature Interpretation

Competency 10.4.1: Demonstrate interpretive abilities

*Competency Builders:*
10.4.1.1 Follow general safety precautions
10.4.1.2 Lead nature hike for a group
10.4.1.3 Prepare an interpretative exhibit or display
10.4.1.4 Present an interpretive slide show
10.4.1.5 Present a program
10.4.1.6 Develop an interpretive publication
10.4.1.7 Lead an interpretive activity

Competency 10.4.2: Develop interpretive skills

*Competency Builders:*
10.4.2.1 Use field guides and keys
10.4.2.2 Operate audiovisual equipment
10.4.2.3 Label a scientific collection
10.4.2.4 Explain folklore and history of area
10.4.2.5 Identify target audience's level of understanding
10.4.2.6 Identify interpretive styles
10.4.2.7 Identify interpretive tools and aids

Unit 10: Resource Conservation
Subunit 10.5: Fish and Wildlife Management Awareness

Competency 10.5.1: Identify angling materials and methods

*Competency Builders:*
10.5.1.1 Identify types of rods and reels
10.5.1.2 Identify artificial and natural baits and lures
10.5.1.3 Identify habitat for nature bait
10.5.1.4 Identify angling types for sport fishing
10.5.1.5 Complete aquatic education course*

Competency 10.5.2: Identify fish management techniques

*Competency Builders:*
10.5.2.1 Follow general safety precautions
10.5.2.2 Identify farm pond construction and multiple-use concepts
10.5.2.3 Identify construction design features conducive to effective fish management
10.5.2.4 Identify acceptable and unacceptable farm pond species for stocking
10.5.2.5 Identify fish-stocking guidelines
10.5.2.6 Identify role of acceptable fish species to be introduced
10.5.2.7 Identify valued sport fish species
10.5.2.8 Determine acceptable level of owner management

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10.5.2.9 Determine owner purpose of water area
10.5.2.10 Identify fish harvest guidelines
10.5.2.11 Identify fish-sampling methods
10.5.2.12 Identify average age growth information for sport fish
10.5.2.13 Identify fish population renovation methods
10.5.2.14 Recognize need for population assessment of predator species
10.5.2.15 Recognize need to assess growth rates for predator species
10.5.2.16 Recognize economic importance of recreational fisheries
10.5.2.17 Identify fish population management practices
10.5.2.18 Recognize actions which would shorten recreational life of a water area
10.5.2.19 Locate aquatic endangered species list
10.5.2.20 Develop fish management plan*

Competency 10.5.3: Identify aquatic vegetative management

*Competency Builders:
10.5.3.1 Follow general safety precautions
10.5.3.2 Identify owner or agency objectives of water area
10.5.3.3 Recognize physical, chemical, cultural, and biological vegetative control methods
10.5.3.4 Identify advantages and disadvantages of aquatic vegetation related to recreation
10.5.3.5 Apply water quality parameters
10.5.3.6 Determine surface area to be treated
10.5.3.7 Determine volume to be treated

Competency 10.5.4: Evaluate wildlife populations

*Competency Builders:
10.5.4.1 Follow general safety precautions
10.5.4.2 Cruise a study area
10.5.4.3 Collect census data
10.5.4.4 Recognize recreational users
10.5.4.5 Define demographics
10.5.4.6 Assess habitat*
10.5.4.7 Evaluate population trends*
10.5.4.8 Measure mortality*

Competency 10.5.5: Identify firearm safety materials and methods

*Competency Builders:
10.5.5.1 Follow general safety precautions
10.5.5.2 Identify basic archery equipment
10.5.5.3 Identify types of rifle actions
10.5.5.4 Identify types of shotgun actions
10.5.5.5 Identify types of sporting firearms
10.5.5.6 Identify basic muzzleloading equipment
10.5.5.7 Identify common game animals

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10.5.5.8 Identify common nongame animals
10.5.5.9 Identify reasons for game laws and seasons
10.5.5.10 Complete hunter education course
10.5.5.11 Maintain target range
10.5.5.12 Practice safe weapons handling
10.5.5.13 Identify differences between rifles and shotguns and specific ammunition types
10.5.5.14 Identify additional equipment necessary for hunting
10.5.5.15 Explain basic reloading components*
10.5.5.16 Plan target range*
10.5.5.17 Set up target range*

**Competency 10.5.6: Trap mammals**

**Competency Builders:**

10.5.6.1 Follow general safety precautions
10.5.6.2 Identify reasons for trapping
10.5.6.3 Identify reasons for game laws and seasons
10.5.6.4 Identify basic types of traps
10.5.6.5 Identify common animals that are trapped
10.5.6.6 Identify basic sets of each species trapped
10.5.6.7 Identify other equipment needed in trapping
10.5.6.8 Develop and maintain trapline
10.5.6.9 Complete trapper education course
10.5.6.10 Maintain records
10.5.6.11 Prepare skins for market

**Competency 10.5.7: Apply animal-control techniques**

**Competency Builders:**

10.5.7.1 Follow general safety precautions
10.5.7.2 Identify animal’s behavior
10.5.7.3 Approach animal
10.5.7.4 Apply various muzzles
10.5.7.5 Form temporary muzzles
10.5.7.6 Apply pneumatic collar
10.5.7.7 Open mouth
10.5.7.8 Restrain animal’s head
10.5.7.9 Net birds
10.5.7.10 Use squeeze cage
10.5.7.11 Use snake hood and fork
10.5.7.12 Operate restraining mechanisms
10.5.7.13 Tape legs
10.5.7.14 Use rodent restrainer
10.5.7.15 Identify animal-control purposes
10.5.7.16 Use small-animal carrier
10.5.7.17 Use rabbit restrainer
10.5.7.18 Use metabolism cage
10.5.7.19 Use shoebox cage

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Competency 10.5.8: Identify wildlife management techniques

Competency Builders:

10.5.8.1 Follow general safety precautions
10.5.8.2 Identify basic reasons for wildlife management
10.5.8.3 Identify basic wildlife management practices for forest game, farm game, furbearers, waterfowl, and nongame species
10.5.8.4 Identify common animals associated with forest game, farm game, furbearers, waterfowl, and nongame species
10.5.8.5 Collect and prepare study skins in each category of species
10.5.8.6 Identify different types of capture techniques
10.5.8.7 Identify basic types of equipment used in wildlife management
10.5.8.8 Identify importance of habitat development as it relates to wildlife populations
10.5.8.9 Identify advantages and disadvantages of introduction of wildlife species to new habitats
10.5.8.10 Identify importance of healthy wildlife population to local economy
10.5.8.11 Identify different types of population control
10.5.8.12 Identify types of population density surveys
10.5.8.13 Identify importance of habitat evaluation and cover mapping
10.5.8.14 Identify carrying capacity
10.5.8.15 Prepare a wildlife management plan*

Unit 10: Resource Conservation
Subunit 10.6: Groundskeeping

Competency 10.6.1: Prepare media mixes

Competency Builders:

10.6.1.1 Follow general safety precautions
10.6.1.2 Mix media materials
10.6.1.3 Mix in media amendments

Competency 10.6.2: Prepare landscape area

Competency Builders:

10.6.2.1 Follow general safety precautions
10.6.2.2 Spread topsoil or topsoil products
10.6.2.3 Grade planting area
10.6.2.4 Apply lime and/or gypsum
10.6.2.5 Shape beds
10.6.2.6 Mark off contour*

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Competency 10.6.3: Establish landscape

*Competency Builders:*

10.6.3.1 Follow general safety precautions
10.6.3.2 Plant seeds
10.6.3.3 Plant bulbs
10.6.3.4 Plant shrubs
10.6.3.5 Plant ground covers
10.6.3.6 Apply mulch
10.6.3.7 Label plants
10.6.3.8 Plant trees
10.6.3.9 Lay sod
10.6.3.10 Plant stolons and plugs
10.6.3.11 Plant hedges and screens
10.6.3.12 Plant annual and perennial plants
10.6.3.13 Dig planting hole
10.6.3.14 Dig up trees and shrubs with a soil ball
10.6.3.15 Inoculate seeds*

Competency 10.6.4: Fertilize plants

*Competency Builders:*

10.6.4.1 Follow general safety precautions
10.6.4.2 Interpret fertilizer bag labels
10.6.4.3 Mix fertilizer solutions
10.6.4.4 Apply fertilizer
10.6.4.5 Determine nutrient requirements*
10.6.4.6 Identify symptoms of nutrient deficiency*
10.6.4.7 Determine kind of fertilizer and lime to apply*
10.6.4.8 Compute fertilizer costs*
10.6.4.9 Interpret manufacturer’s fertilization rate charts*
10.6.4.10 Determine amount of fertilizer and lime to apply*
10.6.4.11 Select application method*
10.6.4.12 Calibrate fertilizer application equipment*
10.6.4.13 Use fertilizer injectors*

Competency 10.6.5: Maintain landscape plants

*Competency Builders:*

10.6.5.1 Follow general safety precautions
10.6.5.2 Pinch plants
10.6.5.3 Cultivate plants
10.6.5.4 Water plants
10.6.5.5 Apply mulches
10.6.5.6 Disbud flowering plants
10.6.5.7 Wrap trees, shrubs, and vines
10.6.5.8 Prune trees
10.6.5.9 Prune shrubs
10.6.5.10 Prune hedges
10.6.5.11 Stake trees
10.6.5.12 Transplant bulbs, corms, and tubers

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10.6.5.13 Apply growth-regulating compounds
10.6.5.14 Thin seedlings
10.6.5.15 Remove old flowers
10.6.5.16 Maintain plants on arbors and trellises
10.6.5.17 Treat tree wounds*

Competency 10.6.6: Maintain trees, shrubs, and hedges

Competency Builders:
10.6.6.1 Follow general safety precautions
10.6.6.2 Climb trees
10.6.6.3 Cord wood to sell
10.6.6.4 Cut trees
10.6.6.5 Determine basic plant form for pruning
10.6.6.6 Dispose of pruned materials
10.6.6.7 Identify branches to prune
10.6.6.8 Install cables and braces
10.6.6.9 Prune suckers and water sprouts
10.6.6.10 Repair storm damage
10.6.6.11 Remove dead material
10.6.6.12 Remove girdling roots
10.6.6.13 Remove stumps
10.6.6.14 Repair bark injuries
10.6.6.15 Identify cause of injury*
10.6.6.16 Determine when to prune*
10.6.6.17 Identify and select bracing materials*

Competency 10.6.7: Maintain turfgrasses

Competency Builders:
10.6.7.1 Follow general safety precautions
10.6.7.2 Sprig and plug seeded areas
10.6.7.3 Overseed turf
10.6.7.4 Water turf
10.6.7.5 Dethatch turf
10.6.7.6 Fill in holes and depressions in turf
10.6.7.7 Mow grass
10.6.7.8 Edge walks and paths
10.6.7.9 Remove clippings and leaves
10.6.7.10 Compost clippings and leaves
10.6.7.11 Identify mowing heights
10.6.7.12 Develop mowing schedule*
10.6.7.13 Develop controlled mowing plan*

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Competency 10.6.8: Utilize pest-control program

*Competency Builders:*

- 10.6.8.1 Follow general safety precautions
- 10.6.8.2 Identify insects, diseases, and weeds
- 10.6.8.3 Identify public health hazards
- 10.6.8.4 Recognize pest damage
- 10.6.8.5 Complete certification requirements for prescribed chemical application
- 10.6.8.6 Interpret chemical labels and compatibility charts
- 10.6.8.7 Identify disease- and insect-resistant species
- 10.6.8.8 Estimate pest population numbers
- 10.6.8.9 Assess degree of damage
- 10.6.8.10 Calculate area to be covered
- 10.6.8.11 Determine when controls are needed
- 10.6.8.12 Evaluate chemical/cultural/biological control options (e.g., integrated pest management [IPM])
- 10.6.8.13 Select chemicals
- 10.6.8.14 Compute treatment cost
- 10.6.8.15 Map chemical application

Competency 10.6.9: Apply chemical pest-control treatments

*Competency Builders:*

- 10.6.9.1 Follow general safety precautions
- 10.6.9.2 Mix chemicals and load application equipment
- 10.6.9.3 Use application equipment
- 10.6.9.4 Follow proper cleaning procedures
- 10.6.9.5 Recognize chemical injury
- 10.6.9.6 Set out bait
- 10.6.9.7 Identify application types
- 10.6.9.8 Calibrate application equipment
- 10.6.9.9 Maintain application record

Competency 10.6.10: Operate aquatic recreation

*Competency Builders:*

- 10.6.10.1 Follow general safety precautions
- 10.6.10.2 Issue boating and safety equipment
- 10.6.10.3 Place boats in water
- 10.6.10.4 Remove boats from water
- 10.6.10.5 Remove debris from water and surrounding area
- 10.6.10.6 Remove weeds from water
- 10.6.10.7 Tie boats
- 10.6.10.8 Complete basic safe boating course
- 10.6.10.9 Mount outboard engine
- 10.6.10.10 Change boat propeller
- 10.6.10.11 Conduct safety inspection
- 10.6.10.12 Install and replace safety cables and markers

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Competency 10.6.11: Establish and maintain trails

*Competency Builders:*

10.6.11.1 Follow general safety precautions
10.6.11.2 Lay out trails
10.6.11.3 Remove obstacles from trails
10.6.11.4 Apply wood chips
10.6.11.5 Construct waterbars
10.6.11.6 Construct steps
10.6.11.7 Construct bridges
10.6.11.8 Identify trail layout aspects
10.6.11.9 Identify trail types
10.6.11.10 Identify and mark plants*
10.6.11.11 Identify and mark trees*

Competency 10.6.12: Maintain roadways and sidewalks

*Competency Builders:*

10.6.12.1 Follow general safety precautions
10.6.12.2 Clean culverts
10.6.12.3 Clean and repair drainage system
10.6.12.4 Fill chuckholes
10.6.12.5 Repair bridges
10.6.12.6 Remove snow
10.6.12.7 Spread gravel
10.6.12.8 Grade roads
10.6.12.9 Maintain roadsides
10.6.12.10 Maintain signs
10.6.12.11 Identify public access requirements for special populations
10.6.12.12 Replace culverts*

Competency 10.6.13: Supervise and maintain camping area

*Competency Builders:*

10.6.13.1 Follow general safety precautions
10.6.13.2 Enforce camping rules
10.6.13.3 Issue camping and recreation equipment
10.6.13.4 Register guests
10.6.13.5 Provide camping information to guests
10.6.13.6 Plan educational programs

Competency 10.6.14: Design landscape*

*Competency Builders:*

10.6.14.1 Select and locate complements*
10.6.14.2 Draw plan to scale*
10.6.14.3 Draw landscape symbols*
10.6.14.4 Design public area planting*
10.6.14.5 Design flower garden*
10.6.14.6 Match plant requirements to environmental conditions*
10.6.14.7 Select plant and seed varieties*
10.6.14.8 Select containers*

* Advancing
** Futuring
Competency 10.6.15: Prepare for landscaping*

Competency Builders:

10.6.15.1 Follow general safety precautions*
10.6.15.2 Calculate percent germination*
10.6.15.3 Determine planting rates*
10.6.15.4 Determine planting depth*
10.6.15.5 Determine planting time*
10.6.15.6 Interpret seed and bulb tag information*
10.6.15.7 Plan planting schedules*

* Advancing
** Futuring