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ABSTRACT

This comprehensive and verified employer competency list was developed from a modified DACUM (Developing a Curriculum) process involving business, industry, labor, and community agency representatives from Ohio. This competency list contains 14 units (with or without subunits), competencies, and competency builders that identify the occupational, academic, and employability skills needed to enter the occupation of carpentry. Within the outline are three levels of items: core (required, the basis for state vocational competency tests); advancing (needed to advance in an occupation); and futuring (needed to enter and remain in a given occupation 3 to 4 years from now). The units cover the following: (1) basic carpentry procedures; (2) layout work; (3) footer and foundation walls; (4) floor framing; (5) wall framing; (6) roof framing; (7) roofing; (8) exterior finish; (9) insulation; (10) interior finish; (11) stairs; (12) energy-efficient construction; (13) special carpentry applications; and (14) employability skills. (KC)

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# OCAP

## OHIO'S COMPETENCY ANALYSIS PROFILE

### CARPENTRY

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# 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 are essential to entry-level employment. These items are required to be taught and will be the basis for questions on the state vocational competency tests (scheduled to begin in FY93). Advancing items (marked with one asterisk) are needed to advance in a given occupation. Futuring items (marked with two asterisks) are needed to enter and remain in a given occupation three to four years from now.

Districts may add as many units, subunits, competencies, and 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 courses of study and monitor competency gains via the new competency testing program.

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  
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Ronald Simmons, *Former GM Executive*, Warren Ohio

# OHIO COMPETENCY ANALYSIS PROFILE

## CARPENTRY

### UNIT 1: Basic Carpentry Procedures

#### COMPETENCY 1.0.1: Acquire tools and tool kit

##### COMPETENCY BUILDERS:

- 1.0.1.1 Identify required tools
- 1.0.1.2 Secure competitive bids
- 1.0.1.3 Purchase tools and tool kit

#### COMPETENCY 1.0.2: Use personal safety equipment according to Ohio Safety and Health Administration (OSHA) standards

##### COMPETENCY BUILDERS:

- 1.0.2.1 View graphic audiovisual materials regarding safety
- 1.0.2.2 Wear side-shield safety glasses
- 1.0.2.3 Wear ear protection
- 1.0.2.4 Wear hard-toed shoes
- 1.0.2.5 Wear hard hat
- 1.0.2.6 Wear appropriate dust mask
- 1.0.2.7 Wear gloves
- 1.0.2.8 Wear appropriate clothing
- 1.0.2.9 Avoid loose-fitting, unbuttoned, or frayed clothing and dangling jewelry
- 1.0.2.10 Secure long hair

#### COMPETENCY 1.0.3: Demonstrate use of safety and fire equipment

##### COMPETENCY BUILDERS:

- 1.0.3.1 Check power sources for potential safety problems
- 1.0.3.2 Use fire extinguishers
- 1.0.3.3 Demonstrate basic first aid
- 1.0.3.4 Use power kill switches
- 1.0.3.5 Check all safety apparatus and equipment
- 1.0.3.6 Use safety apparatus and equipment
- 1.0.3.7 Conduct routine safety inspections

\* Advancing  
\*\* Futuring

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**COMPETENCY 1.0.4: Demonstrate identification, handling, use, and disposal of hazardous materials**

**COMPETENCY BUILDERS:**

- 1.0.4.1 Read material safety data sheet (MSDS) for each hazardous material
- 1.0.4.2 Follow procedures specified on MSDS
- 1.0.4.3 Dispose of hazardous materials according to Environmental Protection Agency (EPA) standards

**COMPETENCY 1.0.5: Use, handle, and store all tools, materials, and equipment**

**COMPETENCY BUILDERS:**

- 1.0.5.1 Identify potential hazards of hand tools
- 1.0.5.2 Demonstrate safe use of all hand tools
- 1.0.5.3 Demonstrate safe handling and lifting methods
- 1.0.5.4 Use power tools
- 1.0.5.5 Use power machinery
- 1.0.5.6 Maintain and check all hand tools
- 1.0.5.7 Maintain and check all power equipment
- 1.0.5.8 Demonstrate pride in use and care of tools and equipment

**UNIT 2: Layout Work**

**COMPETENCY 2.0.1: Use construction drawings**

**COMPETENCY BUILDERS:**

- 2.0.1.1 Identify types of drawings
- 2.0.1.2 Use scales
- 2.0.1.3 Use sections and details
- 2.0.1.4 Interpret symbols
- 2.0.1.5 Use schedules

**COMPETENCY 2.0.2: Use instruments and tools for layout work**

**COMPETENCY BUILDERS:**

- 2.0.2.1 Use measuring tape
- 2.0.2.2 Read measuring tape
- 2.0.2.3 Use framing square
- 2.0.2.4 Use levels
- 2.0.2.5 Use plumb bob
- 2.0.2.6 Use chalk box
- 2.0.2.7 Use builders level

\* Advancing  
\*\* Futuring

**COMPETENCY 2.0.3: Lay out building\***

**COMPETENCY BUILDERS:**

- 2.0.3.1 Obtain permits\*
- 2.0.3.2 Locate property lines\*
- 2.0.3.3 Clear area\*
- 2.0.3.4 Establish building line\*
- 2.0.3.5 Establish setback\*
- 2.0.3.6 Erect batter board stakes\*
- 2.0.3.7 Install ledger boards\*
- 2.0.3.8 Establish grade\*
- 2.0.3.9 Transfer building lines to ledger board\*
- 2.0.3.10 Cut saw kerf ledger board for building lines\*
- 2.0.3.11 Attach dry lines to kerf\*
- 2.0.3.12 Check diagonal dimensions\*

**COMPETENCY 2.0.4: Lay out driveway and sidewalks\***

**COMPETENCY BUILDERS:**

- 2.0.4.1 Read plot plan\*
- 2.0.4.2 Locate sides of driveway\*
- 2.0.4.3 Place stakes\*
- 2.0.4.4 Establish elevations\*
- 2.0.4.5 Cut and install base material\*

**UNIT 3: Footer and Foundation Walls**

**COMPETENCY 3.0.1: Identify and measure materials for footer forms**

**COMPETENCY BUILDERS:**

- 3.0.1.1 Determine sizing for footers
- 3.0.1.2 Determine quantity of materials needed

**COMPETENCY 3.0.2: Construct wall forms**

**COMPETENCY BUILDERS:**

- 3.0.2.1 Determine sizing for wall forms
- 3.0.2.2 Determine quantity of materials needed
- 3.0.2.3 Determine job requirements
- 3.0.2.4 Set line and drive stakes\*
- 3.0.2.5 Cut materials to size\*
- 3.0.2.6 Nail forms in place\*

- \* Advancing
- \*\* Futuring

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**COMPETENCY 3.0.3: Construct entrance platforms and steps\***

**COMPETENCY BUILDERS:**

- 3.0.3.1 Determine job requirements\*
- 3.0.3.2 Lay out work\*
- 3.0.3.3 Drive stakes\*
- 3.0.3.4 Erect forms\*
- 3.0.3.5 Brace walls to alignment\*
- 3.0.3.6 Install risers\*
- 3.0.3.7 Install landing forms\*
- 3.0.3.8 Brace landing forms\*
- 3.0.3.9 Dismantle forms\*

**COMPETENCY 3.0.4: Waterproof foundations\***

**COMPETENCY BUILDERS:**

- 3.0.4.1 Clean walls\*
- 3.0.4.2 Fill holes\*
- 3.0.4.3 Apply material\*

**COMPETENCY 3.0.5: Construct and weatherproof all-weather wood foundation\***

**COMPETENCY BUILDERS:**

- 3.0.5.1 Prepare footer trench\*
- 3.0.5.2 Install gravel pad\*
- 3.0.5.3 Install footing plate\*
- 3.0.5.4 Lay out and construct foundation walls\*
- 3.0.5.5 Erect foundation walls\*
- 3.0.5.6 Caulk plywood joints\*
- 3.0.5.7 Install polyethylene film moisture barrier\*

**COMPETENCY 3.0.6: Construct forms for slabs and paving\***

**COMPETENCY BUILDERS:**

- 3.0.6.1 Determine job requirements\*
- 3.0.6.2 Level base material\*
- 3.0.6.3 Lay out and erect forms\*
- 3.0.6.4 Brace forms\*
- 3.0.6.5 Install reinforcing material\*
- 3.0.6.6 Remove forms\*

- \* Advancing
- \*\* Futuring

**COMPETENCY 3.0.7: Lay out and form sidewalks and driveways\***

**COMPETENCY BUILDERS:**

- 3.0.7.1 Determine job requirements\*
- 3.0.7.2 Spread gravel\*
- 3.0.7.3 Drive stakes\*
- 3.0.7.4 Affix form material to stakes\*
- 3.0.7.5 Remove forms\*

**UNIT 4: Floor Framing**

**COMPETENCY 4.0.1: Construct and install sills and sill sealer**

**COMPETENCY BUILDERS:**

- 4.0.1.1 Determine job requirements
- 4.0.1.2 Clean top of wall
- 4.0.1.3 Cut sealer to lengths
- 4.0.1.4 Select needed material
- 4.0.1.5 Cut sill
- 4.0.1.6 Fasten sill in place

**COMPETENCY 4.0.2: Erect girders, beams, and columns**

**COMPETENCY BUILDERS:**

- 4.0.2.1 Install columns
- 4.0.2.2 Install temporary braces
- 4.0.2.3 Install girders or beams

**COMPETENCY 4.0.3: Install floor joist**

**COMPETENCY BUILDERS:**

- 4.0.3.1 Determine job requirements
- 4.0.3.2 Lay out floor joist
- 4.0.3.3 Cut floor joist
- 4.0.3.4 Install joist headers and trimmers

**COMPETENCY 4.0.4: Install bridging**

**COMPETENCY BUILDERS:**

- 4.0.4.1 Determine job requirements
- 4.0.4.2 Cut bridging
- 4.0.4.3 Install X-bridging
- 4.0.4.4 Install solid bridging
- 4.0.4.5 Install metal bridging

- \* Advancing
- \*\* Futuring

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**COMPETENCY 4.0.5: Install subflooring**

**COMPETENCY BUILDERS:**

- 4.0.5.1 Align floor sheeting
- 4.0.5.2 Fasten floor sheeting to joists
- 4.0.5.3 Trim excess around openings

**UNIT 5: Wall Framing**

**COMPETENCY 5.0.1: Lay out walls and rough openings**

**COMPETENCY BUILDERS:**

- 5.0.1.1 Determine job requirements
- 5.0.1.2 Prepare subfloor
- 5.0.1.3 Strike wall lines
- 5.0.1.4 Locate and mark rough openings

**COMPETENCY 5.0.2: Build and erect walls and install rough openings**

**COMPETENCY BUILDERS:**

- 5.0.2.1 Select materials
- 5.0.2.2 Cut and assemble wall sections
- 5.0.2.3 Erect wall sections
- 5.0.2.4 Install wind bracing
- 5.0.2.5 Install exterior covering

- \* Advancing
- \*\* Futuring

**UNIT 6: Roof Framing**

**COMPETENCY 6.0.1: Lay out, cut, and install ceiling joists and rafters**

**COMPETENCY BUILDERS:**

- 6.0.1.1 Select materials
- 6.0.1.2 Determine length of ceiling joists
- 6.0.1.3 Cut and install ceiling joists
- 6.0.1.4 Determine length of common rafters
- 6.0.1.5 Cut common rafters
- 6.0.1.6 Determine framing member requirements
- 6.0.1.7 Lay out top plate
- 6.0.1.8 Lay out ridge board
- 6.0.1.9 Lay out hip rafters
- 6.0.1.10 Lay out valley rafters
- 6.0.1.11 Lay out jack rafters
- 6.0.1.12 Cut rafters
- 6.0.1.13 Position rafters
- 6.0.1.14 Install rafters
- 6.0.1.15 Install gable-end studs and outlookers

**COMPETENCY 6.0.2: Fabricate and install roof trusses\***

**COMPETENCY BUILDERS:**

- 6.0.2.1 Lay out roof truss\*
- 6.0.2.2 Cut truss parts\*
- 6.0.2.3 Assemble truss\*
- 6.0.2.4 Lay out top plate for truss placement\*
- 6.0.2.5 Install trusses\*

**COMPETENCY 6.0.3: Install roof sheathing**

**COMPETENCY BUILDERS:**

- 6.0.3.1 Lay out and install saddles and crickets
- 6.0.3.2 Lay out sheathing
- 6.0.3.3 Cut sheathing
- 6.0.3.4 Install sheathing

\* Advancing  
\*\* Futuring

# Carpentry--8/91

## UNIT 7: Roofing

### COMPETENCY 7.0.1: Install dripegge and flashing

#### COMPETENCY BUILDERS:

- 7.0.1.1 Determine job requirements
- 7.0.1.2 Assemble materials for dripegge and flashing
- 7.0.1.3 Install dripegge
- 7.0.1.4 Bend dripegge to fit pitch of roof
- 7.0.1.5 Install flashing

### COMPETENCY 7.0.2: Install shingles and caps

#### COMPETENCY BUILDERS:

- 7.0.2.1 Select materials
- 7.0.2.2 Determine installation method
- 7.0.2.3 Determine scaffolding or roof jack requirements
- 7.0.2.4 Erect scaffolding according to OSHA standards
- 7.0.2.5 Install valleys
- 7.0.2.6 Install starter strip
- 7.0.2.7 Install first course of shingles
- 7.0.2.8 Install roof jacks
- 7.0.2.9 Install succeeding courses of shingles
- 7.0.2.10 Install hip and ridge caps

### COMPETENCY 7.0.3: Install roll roofing\*

#### COMPETENCY BUILDERS:

- 7.0.3.1 Select materials\*
- 7.0.3.2 Determine installation method\*
- 7.0.3.3 Determine scaffolding or roof jack requirements\*
- 7.0.3.4 Erect scaffolding according to OSHA standards\*
- 7.0.3.5 Install felt paper and valleys\*
- 7.0.3.6 Strike line for first strip\*
- 7.0.3.7 Install starter strip\*
- 7.0.3.8 Install roof jacks according to OSHA standards\*
- 7.0.3.9 Install succeeding strips\*
- 7.0.3.10 Install ridge cap\*

\* Advancing  
\*\* Futuring

**COMPETENCY 7.0.4: Install wood shingles\***

**COMPETENCY BUILDERS:**

- 7.0.4.1 Select materials\*
- 7.0.4.2 Determine installation method\*
- 7.0.4.3 Determine scaffolding or roof jack requirements\*
- 7.0.4.4 Erect scaffolding according to OSHA standards\*
- 7.0.4.5 Install underlay\*
- 7.0.4.6 Install valleys\*
- 7.0.4.7 Install starter course\*
- 7.0.4.8 Install doubler course\*
- 7.0.4.9 Strike chalk line or attach temporary straightedge\*
- 7.0.4.10 Install shingles\*
- 7.0.4.11 Install shingles around flashing and vents\*
- 7.0.4.12 Install ridge cap shingles\*

**UNIT 8: Exterior Finish**

**COMPETENCY 8.0.1: Install exterior doors, windows, and hardware**

**COMPETENCY BUILDERS:**

- 8.0.1.1 Measure for door unit(s)
- 8.0.1.2 Obtain exterior door unit(s)
- 8.0.1.3 Install exterior door unit(s) and hardware
- 8.0.1.4 Measure for window unit(s)
- 8.0.1.5 Obtain window unit(s)
- 8.0.1.6 Install window unit(s) and hardware

**COMPETENCY 8.0.2: Install fascia, soffits, frieze board, and moldings**

**COMPETENCY BUILDERS:**

- 8.0.2.1 Select fascia
- 8.0.2.2 Install fascia
- 8.0.2.3 Select soffit materials
- 8.0.2.4 Install soffit(s)
- 8.0.2.5 Select moldings and frieze board
- 8.0.2.6 Cut and install moldings and frieze board

**COMPETENCY 8.0.3: Install wall finish**

**COMPETENCY BUILDERS:**

- 8.0.3.1 Assemble materials for wall finish
- 8.0.3.2 Lay out and install wall material

- \* Advancing
- \*\* Futuring

## **Carpentry--8/91**

### **COMPETENCY 8.0.4: Install gutters and downspouts\***

#### **COMPETENCY BUILDERS:**

- 8.0.4.1 Lay out gutters\*
- 8.0.4.2 Cut and install gutters\*
- 8.0.4.3 Cut and install downspouts\*

## **UNIT 9: Insulation**

### **COMPETENCY 9.0.1: Ventilate attic and crawl spaces**

#### **COMPETENCY BUILDERS:**

- 9.0.1.1 Determine job requirements
- 9.0.1.2 Select materials
- 9.0.1.3 Install vents

### **COMPETENCY 9.0.2: Install thermal insulation and vapor barrier**

#### **COMPETENCY BUILDERS:**

- 9.0.2.1 Determine job requirements
- 9.0.2.2 Select materials and fasteners
- 9.0.2.3 Install outer vapor barrier
- 9.0.2.4 Install insulation according to OSHA standards
- 9.0.2.5 Install inner vapor barrier

## **UNIT 10: Interior Finish**

### **COMPETENCY 10.0.1: Install gypsum wallboard**

#### **COMPETENCY BUILDERS:**

- 10.0.1.1 Determine job requirements
- 10.0.1.2 Determine installation method
- 10.0.1.3 Determine type of fastener and drywall compound
- 10.0.1.4 Measure and cut gypsum wallboard
- 10.0.1.5 Fasten wallboard
- 10.0.1.6 Seal joints and fill depressions
- 10.0.1.7 Sand, coat, and finish wallboard

\* Advancing  
\*\* Futuring

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**COMPETENCY 10.0.2: Install wall paneling\***

**COMPETENCY BUILDERS:**

- 10.0.2.1 Determine job requirements\*
- 10.0.2.2 Determine installation method\*
- 10.0.2.3 Measure and cut paneling\*
- 10.0.2.4 Fasten paneling to wall\*
- 10.0.2.5 Install finish moldings\*
- 10.0.2.6 Fill nail holes\*

**COMPETENCY 10.0.3: Install suspended ceilings**

**COMPETENCY BUILDERS:**

- 10.0.3.1 Determine job requirements
- 10.0.3.2 Select materials
- 10.0.3.3 Lay out ceiling line
- 10.0.3.4 Install edge moldings
- 10.0.3.5 Hang wires
- 10.0.3.6 Cut and install grid system
- 10.0.3.7 Install ceiling panels

**COMPETENCY 10.0.4: Install finish flooring\***

**COMPETENCY BUILDERS:**

- 10.0.4.1 Determine job requirements
- 10.0.4.2 Determine installation method\*
- 10.0.4.3 Cut and install underlayment\*
- 10.0.4.4 Lay out centerline\*
- 10.0.4.5 Spread mastic or cement\*
- 10.0.4.6 Install floor tile\*
- 10.0.4.7 Install kick strips
- 10.0.4.8 Determine requirements for wood flooring\*
- 10.0.4.9 Prepare subfloor\*
- 10.0.4.10 Install building paper over subfloor\*
- 10.0.4.11 Install strip flooring, plank flooring, or parquet flooring blocks\*

**COMPETENCY 10.0.5: Install doors**

**COMPETENCY BUILDERS:**

- 10.0.5.1 Determine job requirements
- 10.0.5.2 Verify door schedule
- 10.0.5.3 Install frame
- 10.0.5.4 Fit and hang door
- 10.0.5.5 Install stop and casing
- 10.0.5.6 Install lock set

\* Advancing  
\*\* Futuring

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## **Carpentry--8/91**

### **COMPETENCY 10.0.6: Install window trim**

#### **COMPETENCY BUILDERS:**

- 10.0.6.1 Cut and install stool
- 10.0.6.2 Install side casing
- 10.0.6.3 Install head casing
- 10.0.6.4 Install apron

### **COMPETENCY 10.0.7: Install baseboard and moldings**

#### **COMPETENCY BUILDERS:**

- 10.0.7.1 Determine job requirements
- 10.0.7.2 Cut and install baseboard and shoe mold
- 10.0.7.3 Cut and install crown mold
- 10.0.7.4 Cut and install chair rail

### **COMPETENCY 10.0.8: Install cabinets\***

#### **COMPETENCY BUILDERS:**

- 10.0.8.1 Determine job requirements\*
- 10.0.8.2 Verify cabinets received with requirements\*
- 10.0.8.3 Determine electrical and plumbing clearances\*
- 10.0.8.4 Check squareness and plumb of walls\*
- 10.0.8.5 Check level of floor\*
- 10.0.8.6 Set base unit cabinets in location\*
- 10.0.8.7 Fasten base cabinet sections together\*
- 10.0.8.8 Attach cabinets to walls\*
- 10.0.8.9 Locate and mark studs for wall units\*
- 10.0.8.10 Mark and drill backrail to match stud location\*
- 10.0.8.11 Fasten sections together\*

## **UNIT 11: Stairs**

### **COMPETENCY 11.0.1: Design stairway risers, treads, and head clearances**

#### **COMPETENCY BUILDERS:**

- 11.0.1.1 Lay out stair story pole
- 11.0.1.2 Calculate rise and run
- 11.0.1.3 Determine head height requirements

- \* Advancing
- \*\* Futuring

**COMPETENCY 11.0.2: Install stairway**

**COMPETENCY BUILDERS:**

- 11.0.2.1 Lay out, cut, and install horses (stringers)
- 11.0.2.2 Lay out, cut, and install skirt boards
- 11.0.2.3 Lay out, cut, and install treads and risers
- 11.0.2.4 Lay out, cut, and install moldings, newels, balusters, and handrails

**UNIT 12: Energy-Efficient Construction\***

**COMPETENCY 12.0.1: Construct double exterior walls, foundations, and superinsulated floor framing\***

**COMPETENCY BUILDERS:**

- 12.0.1.1 Determine job requirements\*
- 12.0.1.2 Install foundation insulation\*
- 12.0.1.3 Install insulated floor frame\*
- 12.0.1.4 Select wall materials\*
- 12.0.1.5 Cut and assemble trimmers and headers\*
- 12.0.1.6 Cut and assemble corner post\*
- 12.0.1.7 Erect, cut, and set walls\*
- 12.0.1.8 Install insulating sheathing tyvek wind barrier\*
- 12.0.1.9 Install raised heel truss, sheathing, and roofing\*

**COMPETENCY 12.0.2: Install windows and superinsulated doors\***

**COMPETENCY BUILDERS:**

- 12.0.2.1 Verify and obtain superinsulated door unit\*
- 12.0.2.2 Position and attach door\*
- 12.0.2.3 Verify and obtain window units\*
- 12.0.2.4 Position and attach inner window units\*
- 12.0.2.5 Position and attach outer window units\*

**COMPETENCY 12.0.3: Superinsulate structures\***

**COMPETENCY BUILDERS:**

- 12.0.3.1 Determine job requirements\*
- 12.0.3.2 Select materials and fasteners\*
- 12.0.3.3 Install batts in walls\*
- 12.0.3.4 Install two layers of R-30 insulation in ceiling\*
- 12.0.3.5 Install vapor barrier\*
- 12.0.3.6 Install plastic foam boards or sheets\*
- 12.0.3.7 Blow in insulation\*

- \* Advancing
- \*\* Futuring

## **Carpentry--8/91**

### **COMPETENCY 12.0.4: Construct underground structure\***

#### **COMPETENCY BUILDERS:**

- 12.0.4.1 Verify building site\*
- 12.0.4.2 Install footing forms\*
- 12.0.4.3 Install wall forms\*
- 12.0.4.4 Install roof systems\*
- 12.0.4.5 Apply rubberized materials\*
- 12.0.4.6 Install insulation\*

### **COMPETENCY 12.0.5: Use Arkansas construction method of insulation\***

#### **COMPETENCY BUILDERS:**

- 12.0.5.1 Construct energy-efficient foundation and floor frame\*
- 12.0.5.2 Construct 2" x 6" walls 2' on center with metal T-brace\*
- 12.0.5.3 Install energy-efficient sheathing\*
- 12.0.5.4 Install energy trusses, sheathing, and roofing\*
- 12.0.5.5 Install energy-efficient doors and windows\*
- 12.0.5.6 Install insulation and vapor barrier\*

### **COMPETENCY 12.0.6: Install passive solar features\***

#### **COMPETENCY BUILDERS:**

- 12.0.6.1 Install energy-efficient windows\*
- 12.0.6.2 Install clestories and skylights\*
- 12.0.6.3 Install greenhouse\*
- 12.0.6.4 Install masonry heat storage\*
- 12.0.6.5 Install water wall\*
- 12.0.6.6 Install Trombe wall\*

## **UNIT 13: Special Carpentry Applications\***

### **COMPETENCY 13.0.1: Install window and door replacements\***

#### **COMPETENCY BUILDERS:**

- 13.0.1.1 Determine type and size of unit\*
- 13.0.1.2 Remove existing unit\*
- 13.0.1.3 Adjust rough opening\*
- 13.0.1.4 Position and attach unit\*
- 13.0.1.5 Insulate and seal around unit\*
- 13.0.1.6 Cut, position, and attach steps\*

\* Advancing

\*\* Futuring

**COMPETENCY 13.0.2: Install storm windows and doors\***

**COMPETENCY BUILDERS:**

- 13.0.2.1 Select unit\*
- 13.0.2.2 Position and attach storm windows
- 13.0.2.3 Position and attach door units\*

**COMPETENCY 13.0.3: Install garage doors and power unit\***

**COMPETENCY BUILDERS:**

- 13.0.3.1 Select garage-door unit\*
- 13.0.3.2 Construct garage-door frame\*
- 13.0.3.3 Position and attach garage-door unit\*
- 13.0.3.4 Install garage-door power unit\*

**COMPETENCY 13.0.4: Fabricate countertops\***

**COMPETENCY BUILDERS:**

- 13.0.4.1 Determine job requirements\*
- 13.0.4.2 Select materials\*
- 13.0.4.3 Check base cabinets for level\*
- 13.0.4.4 Level loose cabinets\*
- 13.0.4.5 Cut particle and base underlayment material\*
- 13.0.4.6 Secure underlayment to base cabinets\*
- 13.0.4.7 Cut ledger to edge top\*
- 13.0.4.8 Secure ledger to top\*
- 13.0.4.9 Precut laminate material\*
- 13.0.4.10 Apply mastic\*
- 13.0.4.11 Place drying strips\*
- 13.0.4.12 Align laminate on drying strips\*
- 13.0.4.13 Remove drying strips\*
- 13.0.4.14 Trim edges\*
- 13.0.4.15 Dress edges\*

**COMPETENCY 13.0.5: Install porches and decks\***

**COMPETENCY BUILDERS:**

- 13.0.5.1 Determine job requirements\*
- 13.0.5.2 Lay out deck perimeter\*
- 13.0.5.3 Set posts\*
- 13.0.5.4 Plumb and brace posts\*
- 13.0.5.5 Tamp in or cement posts\*
- 13.0.5.6 Cut, position, and attach frame materials\*
- 13.0.5.7 Cut, position, and attach deck materials\*

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## **Carpentry--8/91**

### **COMPETENCY 13.0.6: Install shutters\***

#### **COMPETENCY BUILDERS:**

- 13.0.6.1 Position and attach exterior decorative shutters\*
- 13.0.6.2 Position and attach interior shutters\*

### **COMPETENCY 13.0.7: Construct protective enclosures\***

#### **COMPETENCY BUILDERS:**

- 13.0.7.1 Determine job requirements\*
- 13.0.7.2 Select materials and fasteners\*
- 13.0.7.3 Construct winterization cover\*
- 13.0.7.4 Install dust and dirt drop\*
- 13.0.7.5 Construct pedestrian walkway\*

### **COMPETENCY 13.0.8: Perform welding and cutting operations\***

#### **COMPETENCY BUILDERS:**

- 13.0.8.1 Wear personal protection gear according to OSHA standards\*
- 13.0.8.2 Determine welding requirements\*
- 13.0.8.3 Use welding and cutting equipment\*
- 13.0.8.4 Use oxyacetylene cutting torch\*

### **COMPETENCY 13.0.9: Frame metal wall partitions\***

#### **COMPETENCY BUILDERS:**

- 13.0.9.1 Determine job requirements\*
- 13.0.9.2 Lay out, cut, and install metal track\*
- 13.0.9.3 Lay out, cut, and install studs

\* Advancing  
\*\* Futuring

**UNIT 14: Employability Skills**

**SUBUNIT 14.1: Career Development**

**COMPETENCY 14.1.1: Investigate career options**

**COMPETENCY BUILDERS:**

- 14.1.1.1 Determine interests and aptitudes
- 14.1.1.2 Identify career options
- 14.1.1.3 Research occupations matching interests and aptitudes
- 14.1.1.4 Select career(s) that best match(es) interests and aptitudes
- 14.1.1.5 Identify advantages and disadvantages of career options, including nontraditional careers
- 14.1.1.6 Assess differences in wages, annual incomes, and job opportunities based on geographic location
- 14.1.1.7 Develop a career plan

**COMPETENCY 14.1.2: Analyze potential barriers to employment**

**COMPETENCY BUILDERS:**

- 14.1.2.1 Identify common barriers to employment
- 14.1.2.2 Develop strategies to overcome employment barriers

**UNIT 14: Employability Skills**

**SUBUNIT 14.2: Decision Making and Problem Solving**

**COMPETENCY 14.2.1: Apply decision-making techniques in the workplace**

**COMPETENCY BUILDERS:**

- 14.2.1.1 Identify the decision to be made
- 14.2.1.2 Compare alternatives
- 14.2.1.3 Determine consequences of each alternative
- 14.2.1.4 Make decisions based on values and goals
- 14.2.1.5 Evaluate decisions

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## **Carpentry--8/91**

**COMPETENCY 14.2.2: Apply problem-solving techniques in the workplace**

### **COMPETENCY BUILDERS:**

- 14.2.2.1 Diagnose the problem and its causes
- 14.2.2.2 Identify alternatives and their consequences in relation to the problem
- 14.2.2.3 Examine multicultural and nonsexist dimensions of problem solving
- 14.2.2.4 Utilize resources to explore possible solutions to the problem
- 14.2.2.5 Compare and contrast the advantages and disadvantages of each solution
- 14.2.2.6 Determine appropriate action
- 14.2.2.7 Evaluate results

## **UNIT 14: Employability Skills**

### **SUBUNIT 14.3: Work Ethic**

**COMPETENCY 14.3.1: Evaluate the relationship of self-esteem to work ethic**

#### **COMPETENCY BUILDERS:**

- 14.3.1.1 Identify special characteristics and abilities in self and others
- 14.3.1.2 Identify internal and external factors that affect self-esteem

**COMPETENCY 14.3.2: Analyze the relationship of personal values and goals to work ethic both in and out of the workplace**

#### **COMPETENCY BUILDERS:**

- 14.3.2.1 Distinguish between values and goals
- 14.3.2.2 Determine the importance of values and goals
- 14.3.2.3 Evaluate how values affect goals
- 14.3.2.4 Identify short-term and long-term goals
- 14.3.2.5 Prioritize personal goals
- 14.3.2.6 Describe how personal values are reflected in work ethic
- 14.3.2.7 Describe how interactions in the workplace affect personal work ethic
- 14.3.2.8 Examine how life-changes affect personal work ethic

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**COMPETENCY 14.3.3: Demonstrate work ethic**

**COMPETENCY BUILDERS:**

- 14.3.3.1 Examine factors that influence work ethic
- 14.3.3.2 Exhibit characteristics that reflect an appropriate work ethic

**UNIT 14: Employability Skills**

**SUBUNIT 14.4: Job-Seeking Skills**

**COMPETENCY 14.4.1: Prepare for employment**

**COMPETENCY BUILDERS:**

- 14.4.1.1 Identify traditional and nontraditional employment sources
- 14.4.1.2 Utilize employment sources
- 14.4.1.3 Research job opportunities, including nontraditional careers
- 14.4.1.4 Interpret equal employment opportunity laws
- 14.4.1.5 Explain the critical importance of personal appearance, hygiene, and demeanor throughout the employment process
- 14.4.1.6 Prepare for generic employment tests and those specific to an occupation/organization

**COMPETENCY 14.4.2: Design a résumé**

**COMPETENCY BUILDERS:**

- 14.4.2.1 Identify personal strengths and weaknesses
- 14.4.2.2 List skills and/or abilities, career objective(s), accomplishments/achievements, educational background, and work experience
- 14.4.2.3 Demonstrate legible written communication skills using correct grammar, spelling, and concise wording
- 14.4.2.4 Complete résumé using various formats
- 14.4.2.5 Secure references

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**COMPETENCY 14.4.3: Complete and process job application forms**

**COMPETENCY BUILDERS:**

- 14.4.3.1 Explain the importance of an application form
- 14.4.3.2 Identify ways to obtain job application forms
- 14.4.3.3 Describe methods for handling illegal questions on job application forms
- 14.4.3.4 Demonstrate legible written communications skills using correct grammar, spelling, and concise wording
- 14.4.3.5 Return application to proper person, request interview, and follow up

**COMPETENCY 14.4.4: Demonstrate interviewing skills**

**COMPETENCY BUILDERS:**

- 14.4.4.1 Investigate interview environment and procedures
- 14.4.4.2 Explain the critical importance of personal appearance, hygiene, and demeanor
- 14.4.4.3 Demonstrate question and answer techniques
- 14.4.4.4 Demonstrate methods for handling difficult and/or illegal interview questions

**COMPETENCY 14.4.5: Secure employment**

**COMPETENCY BUILDERS:**

- 14.4.5.1 Identify present and future employment opportunities within an occupation/organization
- 14.4.5.2 Research the organization/company
- 14.4.5.3 Use follow-up techniques to enhance employment potential
- 14.4.5.4 Compare and evaluate job offers

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**UNIT 14: Employability Skills**

**SUBUNIT 14.5: Job Retention Skills**

**COMPETENCY 14.5.1: Analyze organizational structure of the workplace**

**COMPETENCY BUILDERS:**

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

**COMPETENCY 14.5.2: Maintain positive relations with others**

**COMPETENCY BUILDERS:**

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

**UNIT 14: Employability Skills**

**SUBUNIT 14.6: Job Advancement**

**COMPETENCY 14.6.1: Analyze opportunities for personal and career growth**

**COMPETENCY BUILDERS:**

- 14.6.1.1 Determine opportunities within an occupation/organization
- 14.6.1.2 Compare and contrast other opportunities
- 14.6.1.3 List benefits of job advancement
- 14.6.1.4 Evaluate factors involved when assuming a new position within or outside an occupation/organization

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**COMPETENCY 14.6.2: Exhibit characteristics needed for advancement**

**COMPETENCY BUILDERS:**

- 14.6.2.1 Display a positive attitude
- 14.6.2.2 Demonstrate knowledge of a position
- 14.6.2.3 Perform quality work
- 14.6.2.4 Adapt to changing situations and technology
- 14.6.2.5 Demonstrate capability for different positions
- 14.6.2.6 Participate in continuing education/training programs
- 14.6.2.7 Respect, accept, and work with all individuals in the workplace

**UNIT 14: Employability Skills**

**SUBUNIT 14.7: Technology in the Workplace**

**COMPETENCY 14.7.1: Assess the impact of technology in the workplace**

**COMPETENCY BUILDERS:**

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

**COMPETENCY 14.7.2: Use a variety of technological applications**

**COMPETENCY BUILDERS:**

- 14.7.2.1 Explore basic mathematical, scientific, computer, and technological principles
- 14.7.2.2 Use technology to accomplish assigned tasks
- 14.7.2.3 Create solutions to problems using technical means

**UNIT 14: Employability Skills**

**SUBUNIT 14.8: Lifelong Learning**

**COMPETENCY 14.8.1: Apply lifelong learning to individual situations**

**COMPETENCY BUILDERS:**

- 14.8.1.1 Define lifelong learning
- 14.8.1.2 Identify factors that cause the need for lifelong learning

**COMPETENCY 14.8.2: Adapt to change**

**COMPETENCY BUILDERS:**

- 14.8.2.1 Analyze the effects of change
- 14.8.2.2 Identify reasons why goals change
- 14.8.2.3 Describe the importance of flexibility when reevaluating goals
- 14.8.2.4 Evaluate the need for continuing education/training

**UNIT 14: Employability Skills**

**SUBUNIT 14.9: Economic Education**

**COMPETENCY 14.9.1: Analyze global enterprise systems**

**COMPETENCY BUILDERS:**

- 14.9.1.1 Identify characteristics of various enterprise systems
- 14.9.1.2 Examine the relationship between competition, risk, and profit
- 14.9.1.3 Illustrate how supply and demand influence price

**COMPETENCY 14.9.2: Evaluate personal money management**

**COMPETENCY BUILDERS:**

- 14.9.2.1 Describe the need for personal management records
- 14.9.2.2 Identify methods of taxation
- 14.9.2.3 Analyze how credit affects financial security
- 14.9.2.4 Compare types and methods of investments
- 14.9.2.5 Prepare a personal budget
- 14.9.2.6 Be an informed and responsible consumer
- 14.9.2.7 Analyze the effects of advertising on the consumer

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**UNIT 14: Employability Skills**

**SUBUNIT 14.10: Balancing Work and Family**

**COMPETENCY 14.10.1: Analyze the effects of family on work**

**COMPETENCY BUILDERS:**

- 14.10.1.1 Recognize how family values, goals, and priorities are reflected in the workplace
- 14.10.1.2 Identify present and future family structures and responsibilities
- 14.10.1.3 Describe personal and family roles
- 14.10.1.4 Analyze concerns of working parent(s)
- 14.10.1.5 Examine how family responsibilities can conflict with work
- 14.10.1.6 Resolve family-related conflicts
- 14.10.1.7 Explain how to use support systems/community resources to help resolve family-related conflicts

**COMPETENCY 14.10.2: Analyze the effects of work on family**

**COMPETENCY BUILDERS:**

- 14.10.2.1 Identify responsibilities associated with paid and nonpaid work
- 14.10.2.2 Compare the advantages and disadvantages of multiple incomes
- 14.10.2.3 Examine how work can conflict with family responsibilities
- 14.10.2.4 Describe how work-related stress can affect families
- 14.10.2.5 Identify family support systems and resources

**UNIT 14: Employability Skills**

**SUBUNIT 14.11: Citizenship in the Workplace**

**COMPETENCY 14.11.1: Exercise the rights and responsibilities of citizenship in the workplace**

**COMPETENCY BUILDERS:**

- 14.11.1.1 Identify the basic rights and responsibilities of citizenship
- 14.11.1.2 Examine the history and contributions of all racial, ethnic, and cultural groups

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**COMPETENCY 14.11.2: Cooperate with others in the workplace**

**COMPETENCY BUILDERS:**

- 14.11.2.1 Identify situations in which compromise is necessary
- 14.11.2.2 Examine how individuals from various backgrounds contribute to work-related situations
- 14.11.2.3 Demonstrate initiative to facilitate cooperation
- 14.11.2.4 Give and receive constructive criticism to enhance cooperation

**UNIT 14: Employability Skills**

**SUBUNIT 14.12: Leadership**

**COMPETENCY 14.12.1: Evaluate leadership styles appropriate for the workplace**

**COMPETENCY BUILDERS:**

- 14.12.1.1 Identify characteristics of effective leaders
- 14.12.1.2 Compare leadership styles
- 14.12.1.3 Demonstrate effective delegation skills
- 14.12.1.4 Identify opportunities to lead in the workplace

**COMPETENCY 14.12.2: Demonstrate effective teamwork skills**

**COMPETENCY BUILDERS:**

- 14.12.2.1 Identify the responsibilities of a valuable group member
- 14.12.2.2 Exhibit open-mindedness
- 14.12.2.3 Identify methods of involving each member of a team
- 14.12.2.4 Contribute to the efficiency and success of a group
- 14.12.2.5 Determine ways to motivate others

**COMPETENCY 14.12.3: Utilize effective communication skills**

**COMPETENCY BUILDERS:**

- 14.12.3.1 Demonstrate the importance of listening
- 14.12.3.2 Demonstrate assertive communication
- 14.12.3.3 Recognize the importance of verbal and nonverbal cues and messages
- 14.12.3.4 Analyze written material
- 14.12.3.5 Prepare written material
- 14.12.3.6 Give and receive feedback
- 14.12.3.7 Articulate thoughts
- 14.12.3.8 Use appropriate language

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**UNIT 14: Employability Skills**

**SUBUNIT 14.13: Entrepreneurship**

**COMPETENCY 14.13.1: Evaluate the role of small business in the economy**

**COMPETENCY BUILDERS:**

- 14.13.1.1 Identify the benefits of small business to a community
- 14.13.1.2 Analyze opportunities for small business in a community

**COMPETENCY 14.13.2: Examine considerations of starting a business**

**COMPETENCY BUILDERS:**

- 14.13.2.1 Research a business idea
- 14.13.2.2 Compare various ways to become a small business owner
- 14.13.2.3 Investigate factors to consider in financing a new business
- 14.13.2.4 Evaluate entrepreneurship as a career option

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