Pembroke Hopkins Park Construction Outreach Program
13355 E. 3000 S. Rd., Pembroke Township, IL 60958
Tel: (815) 944-8897 Fax: (815) 944-5675

Competencies / Objectives

Level One

MODULE 93300-01 - NAILS, FASTENERS, & ADHESIVES (5 Hours)

1. Identify the different types of nails, screws, staples, and adhesives.
2. Explain the application of nails, screws, staples, and adhesives.
3. List the basic nail types and their uses.
4. List the basic screw types and their uses.
5. Explain the purpose of MSDS sheets.
6. Describe the two types of adhesives and their uses.
7. Identify the different types of anchors and describe their uses.

MODULE 93300-02 - CONCRETE & REINFORCEMENT MATERIALS (5 Hours)

1. List the materials of which concrete is made.
2. List the common types of cement.
3. List acceptable types of aggregate for concrete.
4. List acceptable water for concrete.
5. List the types of concrete admixtures.
6. List the reinforcing material used in concrete.

MODULE 93300-03 - TOOLS OF THE TRADE (7.5 Hours)

1. Identify and describe the proper use of all sheet metal tools.
2. State general rules of safety when using tools.
3. Describe proper maintenance procedures for tools.

MODULE 93300-04 – FASTENERS (10 hours)

1. Identify the various kinds of fasteners used in sheet metal work.
2. Use the right fastener for the right job.
3. Identify the various aspects of screw and bolt configurations.
4. Describe some of the more common methods of supporting ducts.
5. Identify materials used for hanging and supporting duct sections.
6. Identify the factors that pertain to the selection and use of hangers and supports.
7. Demonstrate skill in the installation of duct fasteners, hangers, and supports.

PHPCOP

MODULE 93300-05 - STEEL & OTHER METALS (10 Hours)

1. State the difference between a pure metal and an alloy.
2. List the eleven common properties of metals.
3. State the chief types of sheet metal.
4. Measure the gauge of sheet metal.

MODULE 93300-06- PRINCIPLES OF LAYOUT (10 Hours)

1. Define basic trade terms pertaining to sheet metal layout.
2. Identify and explain the three development methods for laying out sheet metal patterns.

MODULE 93300-07 - SHEET METAL PROCESSES (20 Hours)

1. Demonstrate skill and competence in the selection and use of layout and marking tools.
2. Demonstrate skill in the selection and use of hand snips for cutting out sheet metal parts and patterns.
3. Demonstrate skill and competence in the selection and use of cutting and forming tools and equipment.
4. Demonstrate skill and competence in the construction of seams and edges.
5. Demonstrate skill and competence in riveting and soldering sheet metal products.

MODULE 93300-08 - BOLTING & ALIGNING (10 Hours)

1. Size machine bolts properly.
2. Identify the various grades of machine bolts.
3. Identify high-strength bolts.
4. Align and tighten structural steel members using the turn-of-nut method.
5. Tighten structural steel members using the calibrated wrench method.

MODULE 93300-09 – RIGGING (10 Hours)

1. Discuss the composition and design of wire rope.
2. Calculate the safe working load of wire rope.
3. Differentiate between safe and unsafe sling angles.
4. Describe and state the uses of common sling configurations.
5. Discuss the applications of hooks, shackles, and spreader beams.
6. Give the proper hand signals to operators of boom equipment.
7. Estimate the location of an object’s center of gravity.
8. Explain the use of tag lines.
9. Tie a half hitch, bowline, and speir knot.

10. Make an eye splice.

MODULE 93300-10 - ROOF SYSTEMS (20 Hours)

1. Locate the 5 scales on a rafter framing square.
2. Describe the terms pitch, span, total rise, and rise per foot run.
3. Define the various members used in a gable roof and hip roof.
4. Perform several functions to find the pitch, rise per foot run, and total rise.
5. Define and explain the various roofing tables on the rafter framing square.
6. Calculate the lengths of common and hip rafters using the rafter framing square.
7. Describe and perform functions using the Essex scale.
8. Describe the method used to establish the measuring line on a rafter.
9. Define the various cuts and miters on a common and hip rafter.
10. Explain the method of transferring the marking of a rafter from the measuring line to the top edge of a rafter.
11. Describe the method of obtaining various lengths of jack rafters.
12. Explain the difference between "theoretical" and "actual" measurements of jack rafters.
13. Describe the use of the speed square in the measuring and cutting of various types of rafters.
14. Describe the unequal roof pitch.
15. Describe the method used to calculate the common rafters for an unequal roof pitch.
16. Describe the different types of plank and beam roofs.
17. Describe the various roof trusses used in the industry today.

MODULE 93300-11 – SOLDERING (5 Hours)

1. Identify, use, and skillfully manipulate soldering tools and materials.

MODULE 93300-12 - GUTTERS & DOWNSPOUTS (10 Hours)

1. Demonstrate skill in understanding the principles of roof design and drainage systems.
2. Demonstrate skill in calculating downspout and gutter sizes.
3. Identify, lay out, and fabricate selected drainage components.

MODULE 93300-13 - ROOF FLASHING (10 Hours)

1. Demonstrate skill in understanding the principles of weather sealing as they apply to architectural sheet metal work.
2. Demonstrate skill in fabricating selected flashing components.
3. Demonstrate skill in understanding installation procedures for selected chimney flashing members.

PHPCOP

Level Two

MODULE 93300-14 - HAND TOOLS (5 Hours)

1. Identify common hand tools used in the metal building assembler trade.
2. Use a hacksaw to cut light-gauge material.
3. Snap lines to given dimensions using a chalk line reel.
4. Cut sheet metal with aviation snips.
5. Bend sheet metal with a duckbill.
6. Repair damaged threads with a thread chaser.
7. Install blind rivets with a hand riveter.
8. Apply sealants with a caulking gun.
9. Use a come-along to lift a load.
10. Mark off structural members with a tape measure and combination square.
11. Attach cable clips to wire rope.

MODULE 93300-15 - POWER TOOLS (5 Hours)

1. State general safety rules regarding power tools.
2. Use a pistol drill to drill holes in sheet metal.
3. Use a hammer drill to drill holes in masonry.
4. Discuss the safe use and applications of rotary hammers.
5. Use a screw gun to install fasteners.
6. Discuss the applications of impact wrenches.
7. Discuss the applications and safe use of circular saws and reciprocating saws.
8. Use a chop saw to make straight and miter cuts.
9. Use a demolition saw to cut light-gauge framing members.
10. Use a shear to make straight cuts on sheet metal.
11. Use a nibbler to make circular and cross-panel cuts on sheet metal.
12. Discuss the applications and safe use of angle grinders.

MODULE 93300-16 - TRIM & FLASHING (7.5 Hours)

1. Differentiate among base, cap, and counter flashings.
2. Discuss material availability as it applies to flashings.
3. Discuss the general characteristics of sealants.
4. Discuss the general characteristics of butyl, silicone, polyurethane, polysulfide, and acrylic sealants as they apply to metal buildings.
5. Describe trim and flashing requirements at various locations in a metal building.

PHPCOP

MODULE 93300-17 - ROOF PANEL TYPES & SYSTEMS DESIGN (5 Hours)

1. Discuss the various loads to which metal roof is subjected.
2. Discuss the components of lap seam metal roofs.
3. State common characteristics shared by standing seam roof systems.
4. Discuss the advantages and limitations of standing seam roofs.
5. Discuss the types of coatings used on standing seam roof panels.
6. Recognize and identify differences between rib configurations and among seaming methods for standing seam roof panels.
7. Discuss sealant requirements for standing seam systems.
8. State three forms in which butyl sealants are available.

MODULE 93300-18 - INSTALLING STANDING SEAM ROOF SYSTEMS (5 Hours)

1. State the hazards associated with roofing operations and discuss ways to prevent accidents.
2. Discuss the factors considered in pre-erection planning.
3. Discuss a general sequence of erection for standing seam roof systems.
4. Discuss eave conditions, ridge conditions, and rake conditions.
5. Discuss skylights, curbs, and walkway systems.

MODULE 93300-19 - INSTALLING LAP SEAM ROOF SYSTEMS (5 Hours)

1. State the hazards associated with roofing operations and discuss ways to prevent accidents.
2. Block purlins to manufacturer’s recommendations.
3. Place insulation safely and in conformance with the requirements of the roof system.
4. Lay out panel modularity.
5. Install roof and ridge panels in conformance with the requirements of the roof system.
6. Splice gutter sections.

MODULE 93300-20 - PHYSICAL CHARACTERISTICS & MECHANICAL PROPERTIES OF METALS (5 Hours)

1. Explain the composition and classifications of ferrous and non-ferrous metals.
2. Identify common ferrous and non-ferrous metals.
3. Explain the physical characteristics of metals.
4. Explain the mechanical properties of metals.
5. Explain standard metal forms and structural shapes.

PHPCOP

MODULE 81100-21 - INTRODUCTION TO WELDING, BRAZING, & CUTTING (5.5 Hours)

1. Understand the basic theory of arc welding.
2. List the health and safety hazards of arc welding.
3. Explain the characteristics and uses of direct-current welding machines, alternating current welding machines, and AC-DC arc-welding machines.
4. Describe the types and uses of electrodes.
5. Categorize welding electrodes according to the American Welding Society's (AWS) classification system.
6. Specify the safety requirements for welding helmets and protective clothing.
7. Make button welds, run weld beads, and build a pad of beads with shielded metal-arc welding (SMAW) electrodes.
8. Weld in the flat, horizontal, vertical, and overhead positions with SMAW electrodes.
9. Describe the basic setups for the gas metal-arc and gas tungsten-arc welding processes.
10. Describe the basic brazing process.
11. State the safety precautions governing flame cutting.
12. Light and extinguish the oxyacetylene torch properly and safely.
13. Make straight cuts on carbon steel plate.

MODULE 93300-22 - ROOFING APPLICATIONS (17 Hours)

1. Describe the process of applying asphalt or fiberglass shingles.
2. Demonstrate the mechanics of installing asphalt or fiberglass shingles on a gable and a hip roof.
3. Demonstrate the techniques of closing up a valley with asphalt or fiberglass shingles.
4. Explain how to make various roof projections watertight when using asphalt or fiberglass shingles.
5. Complete the proper cuts and install the main ridge cap and hip ridge cap with asphalt or fiberglass shingles.
6. Determine the layout, cut the material, and install a cricket or saddle.
7. Describe the process of applying wood shingles and wood shakes.
8. Demonstrate the mechanics of installing wood shingles and wood shakes on gable roof and on the hip roof.
9. Demonstrate the techniques of closing up a valley with wood shingles and wood shakes.
10. Show how to make various roof projections watertight when using wood shingles and wood shakes.
11. Complete the proper cuts and install the main ridge cap and hip ridge cap with wood shingles and wood shakes.
12. Identify some of the other types of roofing finishes that are used.

13. Explain the necessity for safe working conditions on roof jobs.

MODULE 93300-23 - INSTALLATION OF CORNICES, GUTTERS, & DOWNSPOUTS (5 Hours)

1. Identify various types of cornices and demonstrate how to install them.
2. Identify the various components of a gutter and downspout system and demonstrate how to install a designated system.

Level Three

MODULE 93300-24 - FABRICATION II—RADICAL LINE DEVELOPMENT (5 Hours)

1. Describe the principles of radial line development used to determine layouts for sheet metal fittings.
2. Use the principles of radial line development for the layout of selected sheet metal fittings.
3. Demonstrate skill in the layout and fabrication of selected sheet metal fittings and related tasks.

MODULE 93300-25 – REROOFING (7 Hours)

1. Discuss key elements to be considered during a pre-erection survey.
2. Identify the basic components of a substructural system.
3. Discuss the general design factors that are considered when choosing a substructural system.
4. Discuss the general types of ventilating systems that may be used on a new roof.
5. Discuss the general methods used to install a new roof over the existing sloped roof.
6. Discuss methods used to add a slope to a roof.
7. State a general sequence of installation.

Level Four

MODULE 93300-26 - SHOP PRODUCTION & ORGANIZATION (5 Hours)

1. Outline the procedure necessary for planning the work day.
2. Identify the factors that affect speed, efficiency, and minimum waste of material.
3. Describe methods of utilizing scrap metal.
4. Explain how shop assignment procedures are organized.
5. Outline a typical planning and production flow for a sheet metal production shop.
6. Describe how to coordinate sheet metal work with other trades.
7. Explain how to project manpower and material costs.

8. Identify a procedure for utilizing manpower effectively.
9. Describe the role relationships between the supervisory and production staff for a typical sheet metal shop operation.

MODULE 93300-27 - FABRICATION IV—COMPREHENSIVE VIEW (5 Hours)

1. Demonstrate understanding of parallel line development, radial line development, and triangulation as the three development methods for laying out sheet metal patterns.
2. Demonstrate skill in the layout and fabrication of selected sheet metal fittings by using the most suitable development method.
3. Develop knowledge of shortcuts in fabrication.

Pembroke Hopkins Park Construction Outreach Program
13355 E. 3000 S. Rd., Pembroke Township, IL 60958
Tel: (815) 944-8897 Fax: (815) 944-5675

On-the-Job Training

Level One

MODULE 93300-01 – NAILS, FASTENERS, ADHESIVES

Task Number	Item	Dates(s)	Recorded By

93300-01-1 Identify the different types of nails, staples, screws, anchors, and adhesives.
93300-01-2 Select the appropriate fastener for a specific construction activity.
93300-01-3 Differentiate where one fastener type would be appropriate and another not.
93300-01-4 Demonstrate a knowledge of how to use MSDS sheets.

MODULE 81100-02 – CONCRETE & REINFORCEMENT MATERIALS

Task Number	Item	Dates(s)	Recorded By

93300-02-1 List the materials of which concrete is made.
93300-02-2 State the definitions for the various terms used in concrete construction
93300-02-3 List the common types of cement and state where each is used.
93300-02-4 List the acceptable types of aggregate for concrete.
93300-02-5 List acceptable water types for concrete and state how one can determine if a specific water is acceptable.
93300-02-6 List the various types of concrete admixtures and state the effect each has on concrete.
93300-02-7 List the types of reinforcement used in concrete and state where each is used and the reason for using any type of reinforcement.

MODULE 93300-03 – TOOLS OF THE TRADE

Task Number	Item	Dates(s)	Recorded By

93300-03-1 Identify a given hand tool, state its application, and describe its safe use and maintenance.
93300-03-2 Properly use the tool according to given standards.
93300-03-3 Identify a given power tool, state its application, and describe its safe use and maintenance.
93300-03-4 Properly use a given power tool according to given standards.

93300-03-5 Identify a given shop machine, state its application, and describe its safe use and maintenance.
93300-03-6 Properly use the machine according to given standards.
93300-03-7 Select the most suitable tool or machine for a given application.
93300-03-8 Properly use the selected tool or machine to complete the given task, according to given standards.

MODULE 93300-04 – FASTENERS, HANGERS, & SUPPORTS

Task Number	Item	Dates(s)	Recorded By

93300-04-1 Identify a given fastener and state its applications.
93300-04-2 Determine the various grade specifications about given fasteners by measuring.
93300-04-3 Classify hangers by types and gauges.
93300-04-4 Fabricate selected duct hangers, supports, and reinforcements.
93300-04-5 Install selected hangers and supports, using appropriate fasteners.

MODULE 93300-05 – STEEL AND OTHER METALS

Task Number	Item	Dates(s)	Recorded By

93300-05-1 Identify types of metal, plastic, and fiberglass to instructor standards from a given collection of these various sample materials.
93300-05-2 Use a Standard Sheet Metal Gauge to measure various metal thicknesses to given standards.

MODULE 93300-06 – PRINCIPLES OF LAYOUT

Task Number	Item	Dates(s)	Recorded By

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

MODULE 93300-07 – INTRODUCTION TO SHEET METAL PROCESSES

Task Number	Item	Dates(s)	Recorded By

93300-07-1 Transfer a sheet metal pattern to a piece of sheet metal to given standards.
93300-07-2 Use hand snips to make the following cuts to given standards on 24-gauge or lighter sheet metal: straight cuts, outside curved cuts, internal cuts.
93300-07-3 Use hand snips to notch a piece of 24-gauge or lighter sheet metal to given standards.

93300-07-4 Perform a double cut on light pipe to given standards.
93300-07-5 Use a hacksaw to cut a piece of light gauge sheet metal to given standards.
93300-07-6 Use squaring shears to square a piece of light gauge sheet metal to plus or minus 1⁄64th of an inch.
93300-07-7 Use squaring shears to cut a bevel of 45 degrees on the corner of metal stock.
93300-07-8 Use a bar folder to make a hem bend to given standards.
93300-07-9 Use a hand brake to make a Pittsburgh seam to given standards.
93300-07-10 Use a box and pan brake to make right-angle bends to given standards on light gauge stock.
93300-07-11 Use a hand brake to make a government lock to given standards.
93300-07-12 Use a slip-roll forming machine to make two sections of round pipe with grooved seams to given standards.
93300-07-13 Make a crimped edge on round pipe to given standards.
93300-07-14 Join two sections of round pipe by crimping and beading to given standards.
93300-07-15 Use stakes to form a piece of pipe 4 inches in diameter.
93300-07-16 Use stakes to form a cone for a weather cap to given standards.
93300-07-17 Use stakes to form a 90-degree bend to given standards.
93300-07-18 Tin a soldering copper to given standards.
93300-07-19 Solder a lap seam to given standards.

MODULE 93300-08 – BOLTING AND ALIGNING

Task Number	Item	Dates(s)	Recorded By

93300-08-1 Tighten high-strength bolts using the turn-of-nut method.
93300-08-2 Tighten high-strength bolts using the calibrated wrench method.

MODULE 93300-09 – RIGGING

Task Number	Item	Dates(s)	Recorded By

93300-09-1 Calculate the safe working load for given diameters of wire rope.
93300-09-2 Give the proper hand signals to operators of hoisting equipment.
93300-09-3 Tie a half-hitch.
93300-09-4 Tie a bowline.
93300-09-5 Tie a speir knot.
93300-09-6 Make an eye splice.

PHPCOP

MODULE 93300-10 – ROOF SYSTEMS

Task Number	Item	Dates(s)	Recorded By

93300-10-1 Locate various scales on a rafter square.
93300-10-2 Perform mathematical calculations to find pitch, rise per foot run, and total rise.
93300-10-3 Calculate the length of a hip rafter for a specific roof span and rise per foot run.
93300-10-4 Lay out and cut a hip rafter.
93300-10-5 Calculate the various lengths of jack rafters at 16" and 24" on centers.
93300-10-6 Identify the various roof trusses used today.
93300-10-7 Identify the various types of insulation.
93300-10-8 Calculate board foot.
93300-10-9 Perform calculations using the Essex scale.
93300-10-10 Use the speed square to measure, lay out, and cut various types of rafters.

MODULE 93300-11 – SOLDERING

Task Number	Item	Dates(s)	Recorded By

93300-11-1 Clean and shape a soldering copper.
93300-11-2 Tin a soldering copper.
93300-11-3 Tack solder to hold two pieces in a selected position.
93300-11-4 Solder a lap seam in the flat position.
93300-11-5 Pre-tin a seam.
93300-11-6 Solder a vertical lap seam.
93300-11-7 Solder a grooved locked seam.
93300-11-8 Form and set a riveted seam.
93300-11-9 Solder a bottom seam on a round container.
93300-11-10 Prepare and solder a workpiece of aluminum alloy.

MODULE 93300-12 – GUTTERS & DOWNSPOUTS

Task Number	Item	Dates(s)	Recorded By

93300-12-1 Lay out and develop the patterns for:
• 60 degree two piece conductor elbow.
• rectangular shaped 72 degree conductor shoe.
93300-12-2 Fabrication the fitting listed above.
93300-12-3 Form and solder a lap seam and a butt seam.
93300-12-4 Lay out and fabricate the following:

• rectangular outlet tube.
• rectangular gutter (two styles).
• conical gutter outlet.
• rectangular downspout.

MODULE 93300-13 – ROOF FLASHING

Task Number	Item	Dates(s)	Recorded By

93300-13-1 Fabricate flashing for a shingle roof.
93300-13-2 Lay out and fabricate:
• chimney flashing
• typical metal coping profile
93300-13-3 Install a chimney flashing system.

MODULE 93300-14 – HAND TOOLS

Task Number	Item	Dates(s)	Recorded By

93300-14-1 Use a chalk line reel to snap lines to given specifications.
93300-14-2 Cut sheet metal to given specifications with a hacksaw.
93300-14-3 Install blind rivets with a hand riveter.
93300-14-4 Bend sheet metal with a duckbill to given specifications.
93300-14-5 Apply sealants with a caulking gun.
93300-14-6 Lift a load safely with a come-along.
93300-14-7 Cut sheet metal to given specifications with aviation snips.
93300-14-8 Attach cable clips to wire rope.
93300-14-9 Mark off structural members with a tape measure and combination square.
93300-14-10 Repair damaged threads with a thread chaser.

MODULE 93300-15 – POWER TOOLS

Task Number	Item	Dates(s)	Recorded By

93300-15-1 Drill holes to given specifications in sheet metal using a pistol drill.
93300-15-2 Use a chop saw to make straight cuts on given structural shapes to specifications.
93300-15-3 Use a chop saw to make miter cuts on given structural shapes to specifications.
93300-15-4 Use a demolition saw to cut given material.

93300-15-5 Use a shear to make straight cuts on sheet metal to given specifications.
93300-15-6 Use a nibbler to make circular cuts on sheet metal to given specifications.
93300-15-7 Use a nibbler to make cross-panel cuts.
93300-15-8 Use a screw gun to install given fasteners.
93300-15-9 Use a hammer drill to drill holes in masonry for installing anchors.

MODULE 93300-16 – TRIM & FLASHING

Task Number	Item	Dates(s)	Recorded By

93300-16-1 Install trim to manufacturer's specifications.
93300-16-2 Install flashing to manufacturer's specifications.
93300-16-3 Splice trim or flashing to manufacturer's specifications.

MODULE 93300-17 – INSTALLING STANDING SEAM ROOF SYSTEMS

Task Number	Item	Dates(s)	Recorded By

93300-17-1 Align purlins according to manufacturer's recommendations.
93300-17-2 Place sheets according to manufacturer's recommendations.
93300-17-3 Seam panels according to the requirements of the given system.
93300-17-4 Install flexible pipe flashing.
93300-17-5 Install given standing seam roof components.

MODULE 93300-18 – INSTALLING LAP SEAM ROOF SYSTEMS

Task Number	Item	Dates(s)	Recorded By

93300-18-1 Align purlins to manufacturer's recommendations.
93300-18-2 Place insulation safely and correctly.
93300-18-3 Install lap seam roof panels to manufacturer's recommendations.
93300-18-4 Splice gutter sections.
9330018-5 Splice downspout sections.

MODULE 93300-19 – PHYSICAL CHARACTERISTICS & MECHANICAL PROPERTIES OF METALS

Task Number	Item	Dates(s)	Recorded By

9330019-1 Pass the Physical Characteristics and Mechanical Properties of Metals examination with a grade of at least 70 percent.

PHPCOP

MODULE 81100-20 – WELDING, BRAZING, AND CUTTING

Task Number	Item	Dates(s)	Recorded By

93300-20-1 Set up oxyacetylene flame-cutting equipment.
93300-20-2 Light and extinguish the cutting torch.
93300-20-3 Make straight cuts on carbon steel plate.
93300-20-4 Braze selected joints.
93300-20-5 Set up and adjust the power source for arc welding.
93300-20-6 Weld stringer beads.
93300-20-7 Differentiate among SMAW electrodes.
93300-20-8 Perform welds in the following positions for shielded metal-arc welding (SMAW):
• flat
• horizontal
• vertical uphill
• vertical downhill
• overhead
93300-20-9 Perform welds in the following positions for gas metal-arc welding (GMAW):
• flat
• horizontal
• vertical uphill
• vertical downhill
• overhead
93300-20-10 Perform welds in the following positions for gas tungsten-arc welding (GTAW):
• flat
• horizontal
• vertical uphill
• vertical downhill
• overhead
93300-20-11 Perform welds in the following positions for carbon-arc brazing:
• flat
• horizontal
• vertical uphill
• vertical downhill
• overhead
93300-20-12 Perform welds in the following positions for oxyacetylene brazing:
• flat
• horizontal
• vertical uphill
• vertical downhill
• overhead

PHPCOP

MODULE 93300-21 – ROOFING APPLICATIONS

Task Number	Item	Dates(s)	Recorded By

93300-21-1 Demonstrate the installation of asphalt or fiberglass shingles on a gable and a hip roof.
93300-21-2 Demonstrate the technique of closing up a valley with asphalt or fiberglass shingles.
93300-21-3 Demonstrate how to make various roof projections watertight when using asphalt or fiberglass shingles.
93300-21-4 Install main and hip ridge caps with asphalt or fiberglass shingles.
93300-21-5 Perform the layout of, cut the material for, and correctly install a cricket or saddle.
93300-21-6 Demonstrate how to install wood shingles and shakes on a gable roof.
93300-21-7 Install wood shingles and shakes on a hip roof.
93300-21-8 Demonstrate how to install wood shakes and shingles in valleys.
93300-21-9 Demonstrate how to install flashing around roof projections when using wood shingles and shakes.
93300-21-10 Install the main ridge and hip ridge cap with wood shingles and shakes.

MODULE 93300-22 – CORNICES, GUTTERS, & DOWNSPOUTS

Task Number	Item	Dates(s)	Recorded By

93300-22-1 Identify the various cornice-related terms.
93300-22-2 Describe the safety precautions when working on ladders and scaffold.
93300-22-3 Explain the differences of the various types of cornices.
93300-22-4 Demonstrate the construction of the framing for one or more of the various types of cornices.
93300-22-5 Demonstrate the installation procedure for fascia and soffit.
93300-22-6 Install insect screening in a soffit.
93300-22-7 Demonstrate the installation of frieze board.
93300-22-8 Install a cornice return according to instructor specifications.
93300-22-9 Demonstrate the installation of aluminum fascia.
93300-22-10 Identify the different parts of gutter and downspout systems and describe their installation.

MODULE 93300-23 – FABRICATION II - RADIAL LINE DEVELOPMENT

Task Number	Item	Dates(s)	Recorded By

93300-23-1 Rectangular weather cap

93300-23-2 Symmetrical tapered duct
93300-23-3 Roof slope stack flange
93300-23-4 Cone-shaped exhaust weather cap
93300-23-5 Roof peak gravity ventilator
93300-23-6 Round duct intersecting a taper
93300-23-7 Tapered offset duct
93300-23-8 Two-way Y branch
93300-23-9 Off-center tapered duct
93300-23-10 Square-to-square tapered duct
93300-23-11 Shoe tee intersecting a taper - on center
93300-23-12 Tapered elbows - 90 degrees

MODULE 93300-24 – REROOFING

Task Number	Item	Dates(s)	Recorded By

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

MODULE 93300-25 – ROOF COATINGS

Task Number	Item	Dates(s)	Recorded By

93300-25-1 Preparing surfaces for roof coating.
93300-25-2 Applying liquid coating material.
93300-25-3 Removing the staging and cleaning the area.
93300-25-4 Identifying built-up and single-ply roofing system.

MODULE 93300-26 – SHOP PRODUCTION & ORGANIZATION

Task Number	Item	Dates(s)	Recorded By

93300-26-1 Outline the duties of the personnel in a sheet metal shop.
93300-26-2 Outline the production flow in a sheet metal shop.
93300-26-3 Perform metal economy measures on selected duct runs.
93300-26-4 Demonstrate the ability to establish a job flow model which includes manpower, materials, and equipment.
93300-26-5 Estimate the man-hours and materials for a construction job.

PHPCOP

MODULE 93300-27 – FABRICATION IV – COMPREHENSIVE REVIEW

Task Number	Item	Dates(s)	Recorded By

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