



Level One

MODULE 04101-08 – INTRODUCTION TO THE SHEET METAL TRADE

Task Number	Item	Date(s)	Recorded By
04101-1	Identify types of metal from a collection of materials to instructor standards.		
04101-2	Identify common sheet metal fittings.		
04101-3	Use a standard sheet metal gauge to measure various metal thicknesses to given standards.		

MODULE 04102-08 – TOOLS OF THE TRADE

Task Number	Item	Date(s)	Recorded By
04102-1	Identify a given hand tool, state its application, and describe its safe use and maintenance.		
04102-2	Demonstrate the use of a given hand tool, according to standards as given by the instructor.		
04102-3	Identify a given power tool, state its application, and describe its safe use and maintenance.		
04102-4	Demonstrate the use of a power tool, according to standards as given by the instructor.		
04102-5	Identify a given shop machine, state its application, and describe its safe use and maintenance.		
04102-6	Demonstrate the use of a shop machine, according to standards as given by the instructor.		
04102-7	Select the most suitable tool or machine for a given application.		
04102-8	Demonstrate the use of the selected tool, according to standards as given by the instructor.		

MODULE 04103-08 – FASTENERS, HANGERS, AND SUPPORTS

Task Number	Item	Date(s)	Recorded By
04103-1	Transfer a sheet metal pattern to a piece of sheet metal to given standards.		
04103-2	Use hand snips to make the following cuts to given standards on 24-gauge or lighter sheet metal: straight cuts, outside curved cuts, and internal cuts.		
04103-3	Perform a double cut on light pipe to given standards.		
04103-4	Use shears to square a piece of light-gauge sheet metal for ductwork to within 1/16 inch.		
04103-5	Use stakes to form a cone for a weather cap to given standards.04103-4.		
04103-6	Use stakes to form a 90-degree bend to given standards.		
04103-7	Use a slip-roll forming machine to make two sections of round pipe with grooved seams to given standards.		
04103-8	Use a box and pan brake to make right-angle bends to given standards on light-gauge stock.		
04103-9	Use a bar folder to make a hem bend to given standards.		
04103-10	Use a hand brake to make a Pittsburgh seam to given standards.		
04103-11	Make a crimped edge on round pipe to given standards.		
04103-12	Join two sections of round pipe by crimping and beading to given standards.		

MODULE 04104-08 – TRADE MATH ONE

Task Number	Item	Date(s)	Recorded By
04104-1	Use the OWL Method to calculate a specified offset.		

MODULE 04105-08 – INSULATION

Task Number	Item	Date(s)	Recorded By
04105-1	Under the supervision of the instructor, the trainee should be able to lay out and fabricate seven fittings from among the following:		
	• Grooved lock seam		
	• Flexible connection		
	• Pittsburgh seam		
	• Mitered fitting		
	• 90-degree elbow		
	• 90-degree change elbow		
	• 45-degree change elbow		

- Rectangular Y-branch
- 90-degree double Y-branch
- 90-degree clinch tee
- Three-piece round offset
- Transition with three straight sides
- Transition with two straight sides
- Double offset
- Ogee offset
- Rectangular roof flange
- Smokestack
- Gored elbow
- Ogee gutter
- Belt guard
- 90-degree tee (layout only)
- 45-degree tee (layout only)
- Type-A ventilator

MODULE 04106-08 – INSTALLATION OF DUCTWORK

Task Number	Item	Date(s)	Recorded By
04106-1	Identify a given fastener and state its application.		
04106-2	Determine the various specifications of given fasteners.		
04106-3	Classify hangers by types and applications.		
04106-4	Demonstrate the proper method of installing selected duct hangers, supports, and reinforcements.		
04106-5	Connect and seal rectangular and round duct.		

MODULE 04107-08 – INSTALLATION OF AIR DISTRIBUTION ACCESSORIES

Task Number	Item	Date(s)	Recorded By
04107-1	Explain the purpose of selected air distribution accessories.		
04107-2	Simulate and/or demonstrate the installation of selected air distribution accessories.		
04107-3	Install an opposed-blade balancing damper in a section of lined duct.		
04107-4	Install a takeoff in the same section of duct.		

MODULE 04108-01 – FABRICATION ONE—PARALLEL LINE DEVELOPMENT

Task Number	Item	Date(s)	Recorded By
04108-1	<p>Under the supervision of the instructor, the trainee should be able to lay out and fabricate seven fittings from among the following:</p> <ul style="list-style-type: none">• Grooved lock seam• Flexible connection• Pittsburgh seam• Mitered fitting• Square elbow• 90-degree elbow• 90-degree change elbow• 45-degree change elbow• Rectangular Y-branch• 90-degree double Y-branch• 90-degree clinch tee• Three-piece round offset• Transition with three straight sides• Transition with two straight sides• Double offset• Ogee offset• Rectangular roof flange• Smokestack• Gored elbow• Ogee gutter• Belt guard• 90-degree tee• 45-degree tee• Type A ventilator		

Level Two

MODULE 04201-08 – TRADE MATH TWO

Task Number	Item	Date(s)	Recorded By
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This is a knowledge-based module; there is no performance testing.

MODULE 04202-08 – PLANS AND SPECIFICATIONS

Task Number	Item	Date(s)	Recorded By
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This is a knowledge-based module; there is no performance testing.

MODULE 04203-08 – FABRICATION TWO – RADIAL LINE DEVELOPMENT

Task Number	Item	Date(s)	Recorded By
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04203-1	Lay out 7 of the 12 following fittings: <ul style="list-style-type: none">• Rectangular weather cap• Symmetrical tapered duct• Roof pitch stack flange• Cone-shaped exhaust weather cap• Roof peak gravity ventilator• Round duct intersecting a tape• Tapered offset duct• Two-way Y-branch• Off-center tapered duct• Square-to-square tapered duct• Shoe tee intersecting a taper on center• Tapered elbows 90 degrees		
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MODULE 04204-08 – SHEET METAL DUCT FABRICATION STANDARDS

Task Number	Item	Date(s)	Recorded By
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04204-1	Using the example of shop standards located in the module, locate various standards for rectangular ducts in various instructor-specified pressure classes.		
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04204-2	Using the example of shop standards located in the module, use tables, figures, and notes to determine correct hanger sizes and spacings to solve a duct hanging problem supplied by your instructor.		
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MODULE 04205-08 – AIR PROPERTIES AND DISTRIBUTION

Task Number	Item	Date(s)	Recorded By
04205-1	Perform two of the following tasks:		
	<ul style="list-style-type: none">• Use a manometer to measure ESP (external static pressure).		
	<ul style="list-style-type: none">• Use a sling psychrometer to calculate relative humidity.		
	<ul style="list-style-type: none">• Use a flow hood to measure air volume out of a grille or diffuser.		

MODULE 04206-08– BEND ALLOWANCES

Task Number	Item	Date(s)	Recorded By
04206-1	Perform bend allowance calculations with the use of:		
	<ul style="list-style-type: none">• Empirical formula		
	<ul style="list-style-type: none">• Geometrical formula		
	<ul style="list-style-type: none">• Approximate method		
	Lay out and fabricate a mating hat channel.		

MODULE 04207-08 – SOLDERING

Task Number	Item	Date(s)	Recorded By
04207-1	Clean and forge a soldering iron.		
04207-2	Tin a soldering iron.		
04207-3	Tack solder to hold two pieces in the horizontal position.		
04207-4	Solder a lap seam in the flat position.		

MODULE 04208-08 – BASIC PIPING PRACTICES

Task Number	Item	Date(s)	Recorded By
04208-1	Make a solvent-welded PVC joint.		
04208-2	Cut and thread a ½-inch-diameter by 8-inch-long pipe nipple within ⅛-inch tolerance.		

MODULE 04209-08 – FIBERGLASS DUCT

Task Number	Item	Date(s)	Recorded By
04209-1	Lay out fiberglass duct.		
04209-2	Fabricate fiberglass duct using at least two of the following methods: <ul style="list-style-type: none">• Centerline method• Guide edge method• Machine Fabrication		
04209-3	Seal fiberglass duct using at least two of the following methods: <ul style="list-style-type: none">• Pressure-sensitive tape• Heat-activated tape• Mastic and glass fabric tape		
04209-4	Fabricate selected duct modules and fittings using the appropriate tools.		
04209-5	Hang and support fiberglass duct.		
04209-6	Repair major and minor damage to fiberglass duct.		

Level Three

MODULE 04301-09 – TRADE MATH THREE – FIELD MEASURING AND FITTING

Task Number	Item	Date(s)	Recorded By
04301-1	Perform a field measuring task.		

MODULE 04302-09 – AIR SYSTEMS

Task Number	Item	Date(s)	Recorded By
This is a knowledge-based module; there is no performance testing.			

MODULE 04303-09 – PRINCIPLES OF AIRFLOW

Task Number	Item	Date(s)	Recorded By
This is a knowledge-based module; there is no performance testing.			

MODULE 04304-09 – LOUVERS, DAMPERS, AND ACCESS DOORS

Task Number	Item	Date(s)	Recorded By
04304-1	Properly install an exterior louver.		
04304-2	Properly install an opposed-blade damper.		
04304-3	Properly install an access door.		

MODULE 04305-09 – COMPREHENSIVE PLAN AND SPECIFICATION READING

Task Number	Item	Date(s)	Recorded By
04305-1	Identify opening sizes and locations.		
04305-2	List five examples of how you will work with other trades, and how you will resolve potential conflicts.		
04305-3	Generate the material takeoff and buyout lists for a project.		

MODULE 04306-09 – FABRICATION THREE – TRIANGULATION

Task Number	Item	Date(s)	Recorded By
04306-1	Lay out and fabricate the following: <ul style="list-style-type: none">• Square-to-round, two-way offset fitting• Two-way offset transition• Y-branch rectangular transition• 90-degree transition change elbow, radius or square• Tapered duct section with one straight side• Square-to-round at an angle or pitch fitting• Round-to-round Y-branch with branch pipes at 45-degree angles• Double-offset transition		

MODULE 04307-09 – ADVANCED ARCHITECTURAL SHEET METAL

Task Number	Item	Date(s)	Recorded By
04307-1	Lay out, fabricate, and install four of the following: <ul style="list-style-type: none">• Stationary, adjustable, triangular, or round louver• Scupper• Gutter• Flashing and counterflashing• Decking• Cap flashing• Fascia• Water pass-through		
04307-2	Install the roof slope stack flange (roof tall cone), storm collar, and weather cap built in <i>Fabrication Two – Radial Line Development</i> .		

Level Four

MODULE 04401-03 - SHOP PRODUCTION AND ORGANIZATION

Task Number	Item	Date(s)	Recorded By
04401-1	Identify and describe the planning phases of shop production.		
04401-2	Demonstrate knowledge of how sheet metal shops fabricate, assemble, and deliver sheet metal assemblies to the construction job site, ready for installation.		
04401-3	Explain various shop process problems and offer recommendations for proper job control.		
04401-4	Demonstrate knowledge of the various jobs and responsibilities of shop personnel.		

MODULE 04402-03 - AIR BALANCE

Task Number	Item	Date(s)	Recorded By
04402-1	Define terminology associated with air-balance systems.		
04402-2	Identify principal equipment necessary for balancing selected ductrun systems.		
04402-3	Identify an anemometer.		
04402-4	Identify an Alnor Velometer®.		
04402-5	Identify a rotating vane anemometer.		
04402-6	Identify a hot wire anemometer.		
04402-7	Demonstrate competency in balancing a selected ductrun system: <ul style="list-style-type: none">• Follow a systematic balancing system.• Establish a prebalance system for checking.• Follow a systematic reporting method for pitot tube traverse readings.• Adjust registers and diffusers for proper air distribution.		

MODULE 04403-03 - LOUVERS, DAMPERS AND ACCESS DOORS

Task Number	Item	Date(s)	Recorded By
04403-1	Properly install an exterior louver.		
04403-2	Properly install a fire damper.		
04403-3	Describe construction standards for selected dampers.		
04403-4	Properly install an access door.		

The following tasks are optional and are not required.

04403-5	Lay out and fabricate to specified dimensions and standards: <ul style="list-style-type: none">• Stationary louver• Adjustable louver• Triangular louver• Round louver• Access door		
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MODULE 04404-03 - FUME AND EXHAUST SYSTEMS DESIGN

Task Number	Item	Date(s)	Recorded By
04404-1	Identify different kinds of hoods and explain their specific uses.		

MODULE 04405 - FABRICATION FOUR - COMPREHENSIVE REVIEW

Task Number	Item	Date(s)	Recorded By
04405-1	Explain the process for fabricating at least one fitting using each of the following methods: <ul style="list-style-type: none">• Parallel line development• Radial line development• Triangulation		
04405-2	Select, lay out, fabricate, and install at least one fitting using each of the following methods: <ul style="list-style-type: none">• Parallel line development• Radial line development• Triangulation		

04406-03 (MT101) - INTRODUCTORY SKILLS FOR THE CREW LEADER

Task Number	Item	Date(s)	Recorded By
This is a knowledge-based module; there is no performance testing.			