



Level One

MODULE 04101-08 – INTRODUCTION TO THE SHEET METAL TRADE

Overhead projector and screen
Whiteboard/chalkboard
Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Appropriate personal protective equipment
Examples of fiberglass and plastic
Sheet metal gauge and wire gauge
Examples of sheet metal pieces, including:
 Austenitic steel
 Ferritic steel
 Martensitic steel
Magnets and heat sources (torch, burner, heater, etc.)
Material Safety Data Sheets (MSDS)
Module Examinations*
Performance Profile Sheets*

MODULE 04102-08 – TOOLS OF THE TRADE

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Felt-tip markers/chalk

Pencils and scratch paper

Appropriate personal protective equipment

Two sections of duct

Samples of sheet metal

A tool belt with various hand tools

Various types of hand tools, including:

- Hammers and mallets

- Cold chisels

- Crimper

- Punches

- Snips (insulated and non-insulated, aviation, and left- and right-handed)

- Hand notcher

- Folding tool

Various types of stakes, including:

- Blowhorn stake

- Beakhorn stake

- Candle mold stake

- Needle case stake

- Hollow mandrel stake

- Double-seaming stake

- Hatchet stake

Hacksaws

Duct stretcher

Measuring tools, including:

- Flexible steel rule

- Steel square

- Combination square

Layout tools, including:

- Straightedge

- Scratch awl

- Scriber

- Trammel

Various types of drills and drill bits

A turning machine

Measuring and layout tools, including:

- 6-inch steel rule

- U.S. Standard Gauge for sheet metal

- Feeler gauge

- Carbon-tipped scriber

- Awl

Module Examinations

Performance Profile Sheets

Module 04103-08 – INTRODUCTION TO SHEET METAL LAYOUT AND PROCESSES

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Pencils and scratch paper

Appropriate personal protective equipment

Assorted samples of sheet metal, including 24-gauge or lighter

Empty cereal box

Layout materials, including:

- Steel rule

- Scratch awl

- Sheet metal scriber

- Punches

- Combination square

- Trammels

- Dividers

Sections of light pipe

Stakes

Mallets

Notchers (dovetail and hand)

Crimper

Sections of round pipe (snap-lock)

Screwdriver, screws

Hand snips

- Double-cutting

- Combination

- Straight blade

- Aviation (left-hand, right-hand)

Slip-roll forming machine

Squaring shears

Box and pan brake

Bar folder

Hand brake

Lever punch

Hand-cranked beading machine

Module Examinations

Performance Profile Sheets

MODULE 04104-08 – TRADE MATH ONE

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Appropriate personal protective equipment

Assorted examples of paper stretchouts

Sample sheet metal pieces

Sheet metal scribe

Metal straightedge

Empty milk jugs, pitchers, other liquid containers

Straight pins

Assorted lengths of string

Calculators

Protractors, compasses, and dividers to perform the geometry exercises

Various types of flexible, bench, and tape rules, marked with English and metric measures

Assorted measuring cups marked with English and metric measures

Weights and scale

Assorted rules marked with English and metric measures

Module Examinations

Performance Profile Sheets

MODULE 04105-08 – FABRICATION ONE – PARALLEL LINE DEVELOPMENT

Overhead projector and screen

Transparencies

Whiteboard/chalkboard

Markers/chalk

Blank acetate sheets

Transparency pens

Pencils and scratch paper

Drafting pencils

Ledger (11" × 17") paper

Appropriate personal protective equipment

26-gauge, galvanized iron sheet metal pieces for patterns, according to specifications for each fitting

Materials for fittings, including:

- Prefabricated flexible connection material (*NFPA Standard 90A*)

- Fabric-to-fabric connection sealant (NFPA approved)

A completed Type-A ventilator

Hand tools for cutting, forming, and finishing fittings, including:

- Groover

- Notcher

- Seamer

- Sheet metal hammer

- Snips

- Heavy-duty staple gun and staples

- Soldering equipment

- Welding equipment

Machines for forming and finishing fittings, including:

- Bar folder

- Brake

- Squaring shear

- Slip-roll

- Pittsburgh roll-forming

- Easy edger

Layout tools, including:

- Straightedge

- Flexible steel rule

- Combination square

- Scratch awl

- Scriber

- Prick punch

- Framing square

- Mallet

- Felt-tipped marker

- Wing dividers

- 45-degree triangle

Module Examinations

Performance Profile Sheets

MODULE 04106-08 – INSTALLATION OF DUCTWORK

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Pencils and scratch paper

Appropriate personal protective equipment

Examples of fastening tools, including:

- Screwdrivers

- Allen wrenches

Examples of connecting tools, including:

- Socket wrenches

- Drift pin

- TDC corner piece crimping tool

- Hand crimper

- Snips for cutting a dovetail connection

Steel rule for measuring sizes of bolts and screws

Hand-operated blind riveter, blind rivets (domed), and practice workpiece

Expansion shield

Thread pitch gauge

Ruler

Duct sealant

Sample duct sections, including:

- TDC, Ductmate®, or S and drive connected fittings

- Spiralmate®, Ovalmate®, crimped, collared, or dovetail connected fittings

Examples of bolts, including:

- Carriage

- Machine

- Stove

- Stud

Examples of screws, including:

- Cap

- Lag

- Self-tapping

- Setscrew

- Wood

Copies of your local code

Examples of nuts and washers, including:

- Interference nut

- Jam nut

- Pal nut

- Castellated nut

- Self-locking nut

- Split-ring washer

- Spring-type washer

- Tooth-type washer

- Prem assembly

Practice assembly boards/sheet metal with predrilled holes suitable for fastening selected screws and bolts in place

Examples of special-purpose fasteners, including:

- Toggle bolts
- Molly bolts
- Threaded anchors

A section of flexible duct

Examples of fasteners for hangers, including:

- #10 plated sheet metal screw
- 2½-inch square washer
- ¼-inch bolt

Examples of duct supports (riser supports should have holes for #10 screw), including:

- Channel
- Wall support angle
- Floor support angle iron
- Trapeze assembly with rod and wire alternatives
- Single strap
- Strap for flexible duct

Module Examinations

Performance Profile Sheets

MODULE 04107-08 – INSTALLATION OF AIR DISTRIBUTION ACCESSORIES

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Pencils and scratch paper

Copies of your local code

Appropriate personal protective equipment

Assorted air handling and zoning accessories, including those designed for flexible duct attachment

Flexible duct hangers

Assorted sections of flexible duct, including duct with vapor barriers and insulation

A cardboard box and two stiff pieces of cardboard

Various types of louvers, including one that is in its original packaging

Manual volume damper (opposed-blade and parallel-blade)

Fire or fire/smoke damper

Tools required for flexible duct installation

Various registers, grilles, and diffusers

Module Examinations

Performance Profile Sheets

MODULE 04108-08 – INSULATION

Overhead projector and screen

Transparencies

Transparency pens

Blank acetate sheets

Whiteboard/chalkboard

Markers/chalk

Pencils and scratch paper

Tape measures

Straightedges

Assorted pieces of cardboard (18" × 18")

Installation tools

Insulation tape and adhesives

Staple gun and staples

Scissors

Assorted duct sections, including:

- Rectangular duct

- Round duct

- Oval duct

Assorted flexible and rigid fibrous glass duct liners

Assorted samples of different types of fiberglass duct and blanket insulation

Assorted samples of metal nosing

Brushed-on adhesive strips for blanket insulation

Vapor barrier mastic

Assorted mechanical fasteners

Assorted samples of insulation with factory-applied adhesive

Assorted samples of fiberglass pipe insulation, including insulation with the All-Service Jacket (ASJ)

Appropriate personal protective equipment, to include:

- Gloves

- Safety glasses

Heavy cardboard or plywood sheet

Assorted samples of tube insulation

Copies of various property requirements

Module Examinations

Performance Profile Sheets

MODULE 04109-08 – ARCHITECTURAL SHEET METAL

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Pencils and scratch paper
Appropriate personal protective equipment
Copies of your local code
Samples of shingles, wood shakes, and slate and tile roofing
Roll roofing (standard, granule, and selvage)
Slate roofing (grades A through C)
Large sheets of heavy, white paper
Scissors
Rulers
26-gauge galvanized sheet metal (12-inch and 10-inch)
Soldering equipment and supplies
Layout and development tools
Aviation snips
Combination square
Flexible steel rule
Circumference rule
Steel square
Hand seamer
Box or pan brake
Squaring shear
Slip-roll forming machine
Number three hand groover
Bar folder
Layout and development tools
Tools and materials to lay out and fabricate two rectangular gutters
Tools and materials to lay out and fabricate shingle roof flashing, including:
 Drawing of a shingle roof flashing (*Figure 37*)
Tools and materials to lay out and fabricate chimney flashing, including:
 Sealant
 Hammer and galvanized roofing nails
 Lead wedges
 Drawing of chimney flashing (*Figure 38*)
Tools and materials to lay out and fabricate wall flashing (top surface), including:
 Drawing of coping profile (*Figure 40*)
Real or mockup small residential chimney fabrication
Model wall, model chimney, and model roofing
Module Examinations
Performance Profile Sheets

Level Two

MODULE 04201-08 – TRADE MATH TWO

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Overhead projector and screen
Whiteboard/chalkboard
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
English ruler
Metric ruler
Sections of cut pipe
Calculator
Protractor
Sheets of unlined paper
Micrometers
Vernier calipers
Test pieces of fixed sizes to measure using micrometers and vernier calipers
Module Examinations

MODULE 04202-08 – PLANS AND SPECIFICATIONS

Transparencies
Markers/chalk
Overhead projector and screen
Whiteboard/chalkboard
Blank acetate sheets
Transparency pens
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
Several sets of commercial blueprints
Sample schedule
Drawing plans provided with this module:
Civil plans
Architectural plans
Mechanical plans
Structural plans
Plumbing plans
Electrical plans
Sample shop drawing and the mechanical drawing on which it is based
Sample submittals
Sample as-built drawing and its original mechanical or shop drawing
Module Examinations

MODULE 04203-08 – FABRICATION TWO – RADIAL LINE DEVELOPMENT

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Overhead projector and screen
Whiteboard/chalkboard
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
Sample pictorial views, elevation, and plan views
Sample pattern drawings
Layout tools, including:
Scratch awls
Pencils and felt-tipped markers
Straightedge
Flat steel square and combination square
Prick punch and center punch
Dividers
Trammel points
Marking gauge
French curves
Circumference rule
1/4-inch tape measure
Appropriate gauge and sufficient quantity of sheet metal
Several fittings that include dimension errors
Sheet metal brake
Sheet metal shear
Whitney hand (lever) punch
Beading, crimping, turning, slip-roll forming, and burring machines
Ring and circle shears
Bar folder
Gas welding equipment
Arc welder
Bench plate and stakes
Electric spot welder
Hand seamer
C-clamps and parallel clamps
Sheet metal hammer and mallet
Sheet metal snips
Chisel
Rivet set and hand groover
Drill bits and drill
Files
Hacksaw
Screwdrivers, wrenches, and pliers
Module Examinations
Performance Profile Sheets

MODULE 04204-08 – SHEET METAL DUCT FABRICATION STANDARDS

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Overhead projector and screen
- Whiteboard/chalkboard
- Pencils and paper
- Appropriate personal protective equipment
- Copies of, or samples from, several organizations' standards
- Copies of your local code
- Copies of or samples from SMACNA's HVAC Duct Construction Standards—Metal and Flexible, third edition, 2005, or similar standards publication from NAIMA or another association.
- A variety of standard transverse connectors and proprietary connectors
- A variety of longitudinal seams
- Module Examinations
- Performance Profile Sheets

MODULE 04205-08 – AIR PROPERTIES AND DISTRIBUTION

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Overhead projector and screen
- Whiteboard/chalkboard
- Pencils and paper
- Appropriate personal protective equipment
- Copies of your local code
- Calculators
- Dry- and wet-bulb thermometers
- Sample psychrometric charts
- Samples of manufacturers' fan curve charts
- Digital and analog electronic thermometers
- Sling, squeeze-bulb, and battery-operated psychrometers
- Different types of manometers
- Copies of the Practice Problems*
- Module Examinations
- Performance Profile Sheets

MODULE 04206-08 – BEND ALLOWANCES

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Overhead projector and screen
Whiteboard/chalkboard
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
Bent sheet metal that shows tensile stress, compression stress, and a neutral axis
Metal coat hanger
Calculator
Scriber
Straightedge
Combination square
Felt-tipped marker
Hand punch and prick punch
Sheet metal hammer
Mallet
Screwdriver and pliers
Drill and drill bits
Reamer
¼-inch tape measure
Circumference rule
Sheet metal gauge
Sheet metal snips
Shearing, bending, and forming machines
Module Examinations
Performance Profile Sheets

MODULE 04207-08 – SOLDERING

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Overhead projector and screen
Whiteboard/chalkboard
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
A variety of solders, including:
 Bar solder
 Pig solder
 Cake solder
 Paste solder
 Foil, sheet, or ribbon solder

- Segment or drop solder
- Solid or cored wire solder
- Wire or bar 50/50 tin-lead solder
- Material safety data sheets (MSDS) for solder and flux
- A variety of soldering irons, including:
 - Light-duty iron
 - Medium-duty iron
 - Heavy-duty iron
 - Temperature-controlled iron
 - Transformer pencil iron
 - Soldering gun
- Soldering iron tips, including:
 - Copper
 - Iron-plated with a coated shank
 - Iron-plated with a stainless steel shank
 - Calorized
- Supplies to clean metal surfaces, including:
 - Acid swab or brush
 - Approved cleaning solvents
 - Hydrochloric acid and sulfuric acid
 - Abrasive cleaning materials
 - Soap, water, clean cloths
- Materials for surface preparation, including:
 - Course-cut flat file and fine file
 - File, metal scraper, or stainless steel wire brush
 - Emery cloth or sandpaper
 - Sal ammoniac block
- Materials to apply flux to a joint, including:
 - Soldering flux
 - Stainless steel flux
 - Metal joint
 - Fiber brush or swab
- Samples of joints, including:
 - T
 - Lap
 - Flush lap
 - Flat lock seam
 - Grooved lock seam
- Soldering furnace
- 14-ounce ball peen or setting hammer
- Number-three hand groover
 - Rivet set and six 1¼ -inch pop rivets
- Sheet metal hammer
- Drill with ⅛-inch drill bit
- Center punch
- Metal scribe
- Combination square
- Vise

Anvil
Hand seamer
Transite, wood, or other insulated-backing sheet material
Nails or clamps
Sheet metal to be formed and soldered, including:
Six pieces of 2" × 6" galvanized iron, 24-gauge
Two pieces of 2½" × 6" galvanized iron, 24-gauge
Two pieces of 2¾" × 6" galvanized iron, 24-gauge or lighter
Two pieces of 2" × 6" aluminum sheet, .025-inch thick
Round container, soldered with solder beads
Metal for soldering a 8" × 8" × 8" pan (galvanized iron, galvanized steel, aluminum, stainless steel)
Metal for soldering a drain (galvanized iron, galvanized steel, aluminum, stainless steel)
Drains
Module Examinations
Performance Profile Sheets

MODULE 04208-08 – BASIC PIPING PRACTICES

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Overhead projector and screen
Whiteboard/chalkboard
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
Several sections of pipe, including:
Threaded metal pipe

- threaded pipe with fitting on one end
- threaded pipe with fittings on both ends

Sections of cut metal pipe with burrs
Sections of metal pipe for tube cutting
Unthreaded metal and plastic pipe
Tools for measuring sections of pipe
Tube cutter
Pipe reamers
Hacksaw and miter box
Pipe dies and stock
Pipe-threading machines
Oil and rags
Joint compound
Teflon[®] tape
Manufacturer's instructions for solvent cements
Materials to join grooved pipe, including:
Manufacturer's instructions
Lubricant
Grooved pipe

Gasket
Necessary tools to tighten the nuts
Sample pipe fittings, including:
Tees
Elbows
Unions
Couplings
Nipples
Crosses
Plugs and caps
Bushings
Module Examinations
Performance Profile Sheets

MODULE 04209-08 – FIBERGLASS DUCT

Transparencies
Markers/chalk
Whiteboard/chalkboard
Overhead projector and screen
Blank acetate sheets
Transparency pens
Pencils and paper
Appropriate personal protective equipment
Copies of your local code
Calculators
Television/VCR
NAIMA's free video, Play it Smart, Play it Safe
Sections of fiberglass duct, including:
Rigid duct board
Rigid round duct
Flexible round duct
Damaged duct
Flexible duct board
Pieces of duct board that show the standard tooling and reverse tooling setup
Insulation knife
Peeler knife
Round hole cutter
Duct layout squares and transition tools
Heat sealing irons
Grooving tools (hand or machine)
Oil-free, lint-free cloth
Vane hole cutter
Rule
Measuring tape
Straightedge
Squaring tool

Staple gun and outward clinching staples
Pressure-sensitive tape, heat-activated tape,
mastic, and glass fabric tape
Plastic tape rubbing tool
Male and female hand shiplap tools
Fine tooth saw
Miter box
Sheet metal sleeves and elbows
Metal reducers
Sheet metal collars (spin-in and dovetail)
Foam insulating sealant
Closure straps
FasLoop™ bending tools
14" horseshoe nippers or carpenter's pincers
Wire cutters
12-gauge galvanized steel wire
Galvanized steel washers
– 2½-inch-square by .028-inch-thick
– 2½-inch-square by .020-inch-thick
Turning vanes, including rail-mounted vanes
Module Examinations
Performance Profile Sheets

Level Three

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

- Overhead projector and screen
- Transparencies
- Blank acetate sheets
- Transparency pens
- Whiteboard/chalkboard
- Markers/chalk
- Pencils and paper
- Calculators with trigonometric functions
- Plumb bob and chalk line
- Module Examinations
- Performance Profile Sheets

MODULE 04302-09 – AIR SYSTEMS

- Overhead projector and screen
- Transparencies
- Blank acetate sheets
- Transparency pens
- Whiteboard/chalkboard
- Markers/chalk
- Pencils and paper
- Copies of your local code
- News articles on sick building syndrome and/or other building-related illnesses
- Copies of Figure 27 with the legend covered
- Supply outlets, including:
 - Grilles and registers
 - Ceiling diffusers
 - Perforated ceiling panels
 - Slot diffusers
 - Fan coil heating units
 - Concentric duct diffusers
- Sample air terminals, including:
 - Standard VVT air terminals
 - Single-duct VAV air terminals
 - Parallel fan-powered mixing box air terminals
 - Series fan-powered mixing box air terminals
- Module Examinations

MODULE 04303-09 – PRINCIPLES OF AIRFLOW

- Overhead projector and screen
- Transparencies
- Blank acetate sheets
- Transparency pens
- Whiteboard/chalkboard

MODULE 04303-09 – PRINCIPLES OF AIRFLOW (CONTINUED)

Markers/chalk
Pencils and paper
Copies of your local code
Sample duct calculators
Calculators
Germans from Russia Heritage Society plans from Module 04202-08 or 04305-09
Module Examinations

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

Overhead projector and screen
Transparencies
Blank acetate sheets
Transparency pens
Whiteboard/chalkboard
Markers/chalk
Pencils and paper
Appropriate personal protective equipment
NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems
Copies of your local code
Copies of indoor air quality laws
Plans and design specifications
Design drawings that show fire dampers and fire doors
Damper with UL Fire Damper label
Sample manufacturers' data sheets for combination fire and smoke dampers
Adjustable and stationary louvers
Stationary and adjustable louver blades, sills, jambs, and headers
Various sizes and shapes of dampers
Caulk
Caulking gun
Necessary tools to install louvers, dampers, and access doors
Module Examinations
Performance Profile Sheets

MODULE 04305-09 – COMPREHENSIVE PLAN AND SPECIFICATION READING

Overhead projector and screen
Transparencies
Blank acetate sheets
Transparency pens
Whiteboard/chalkboard
Markers/chalk
Pencils and paper
Copies of your local code
Sample critical path method diagram
Sample Request for Information form
Blank Request for Information forms

MODULE 04305-09 – COMPREHENSIVE PLAN AND SPECIFICATION READING (CONTINUED)

Samples of manual- and computer-generated cut lists

Sample material takeoff list

Sample material buyout list

A complete set of plans, including:

Architectural drawings

Mechanical drawings

Structural drawings

Module Examinations

Performance Profile Sheets

MODULE 04306-09 – FABRICATION THREE – TRIANGULATION

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Appropriate personal protective equipment

Copies of your local code

Prick-punch

24-gauge galvanized iron sheet metal

26-gauge galvanized iron sheet metal

Sample pattern layouts

Framing square

Tools and materials to lay out and fabricate the following:

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

Module Examinations*

Performance Profile Sheets

MODULE 04307-09 – ADVANCED ARCHITECTURAL SHEET METAL

Overhead projector and screen

Transparencies

Blank acetate sheets

Transparency pens

Whiteboard/chalkboard

Markers/chalk

Pencils and paper

Appropriate personal protective equipment

Safety harnesses and lanyards

Copies of your local code

Layout tools, including:

- Scratch awls

- Felt-tipped markers

- Straightedge

- Flat steel square and combination square

- Prick punch and center punch

- Dividers

- Trammel points

- Marking gauge

- French curves

- Circumference rule

- 1/4-inch tape measure

Appropriate gauge and sufficient quantity of sheet metal

Sheet metal brake

Sheet metal shear

Whitney hand punch

Beading, crimping, turning, slip-roll forming, and burring machines

Ring and circle shears

Bar folder

Bench plate and stakes

Electric spot welder

Hand seamer

C-clamps and parallel clamps

Sheet metal hammer and mallet

Sheet metal snips

Dimpler/button punch

Rivet set and hand groover

Drill bits and drill

Screwdrivers, wrenches, and pliers

Module Examinations

Performance Profile Sheets

Level Four

MODULE 04401-03 - SHOP PRODUCTION AND ORGANIZATION

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of your local code
Accident reports from the Occupational Health and Safety Administration's Web site
Bill of materials and associated drawings
Master production schedule
Material requirements plan
Sample shop layouts
Sample labels produced by a computer-aided design software program
Daily field time sheets
Logs of time
Module Examinations
Performance Profile Sheets
Copies of Quick Quiz

MODULE 04402-03 - AIR BALANCE

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of your local code
Sample field balancing data sheets
Manufacturer's instructions for a variety of air-measuring devices
A variety of air-measuring devices
Calculators
Manometers
Fan curve charts
Manufacturer's instructions for estimating air quantities in conditioning equipment
Sample duct design drawings
Thermocouple or thermistor-type thermometers
Sample reporting forms
Module Examinations
Performance Profile Sheets

MODULE 04403-03 - LOUVERS, DAMPERS, AND ACCESS DOORS

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of your local code
Copies of indoor air quality laws
Blueprints and design specifications
NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems
Design drawings that show fire dampers and fire doors
Damper with a UL Fire Damper label
Sample manufacturer's data sheets for combination fire and smoke dampers
Adjustable and stationary louvers
Stationary and adjustable louver blades, sills, jambs, and headers
Various sizes and shapes of dampers
Sample door frames, access doors, hinges, and handles
Caulk
Caulking guns
Necessary tools to install an access door
Module Examinations
Performance Profile Sheets

MODULE 04404-03 - FUME AND EXHAUST SYSTEM DESIGN

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of your local code
Sample regulations from several national safety organizations, including:
 The American Society of Heating, Refrigeration, and Air-Conditioning Engineers
 The National Fire Protection Association
 The American Conference of Governmental Industrial Hygienists
Copies of the wet collector in *Figure 21* with the symbol key covered
Pitot tube
Calculators
Module Examinations
Performance Profile Sheets
Copies of Quick Quiz

MODULE 04405-03 - FABRICATION FOUR – COMPREHENSIVE REVIEW

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of your local code
Tools and equipment needed to perform layout and fabrication tasks
Sheet metal
Paper for drawing patterns
Module Examinations
Performance Profile Sheets

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

Transparencies
Markers/chalk
Calculator
Pencils/scratch paper
Example of OSHA Log Books
Examples of MSDS Sheets
Copies of Module Examinations
Overhead projector Screen (or large blank wall)
Whiteboard/chalkboard

Level Four

