



**Pembroke/ Hopkins Park Community Outreach Program**

13355 E. 3000 S. Rd., Pembroke Township, IL 60958

Tel: (815) 944-8817 Fax: (815) 944-5675

**Level One**

**MODULE 02101-05 – INTRODUCTION TO THE PLUMBING PROFESSION (5 Hours)**

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  
*International Plumbing Code (IPC)*  
*Uniform Plumbing Code (UPC)*  
*National Standard Plumbing Code (NSPC)*  
Module Examinations

**MODULE 02102-05 – PLUMBING SAFETY (20 Hours)**

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 your company's safety program  
Examples of personal protective equipment:  
    Gloves  
    Hard hat  
    Eye protection  
    Hearing protection  
    Safety shoes  
    Respiratory protection  
    Fall protection (body harness)



Rubber gloves to conduct an air test

Respirators

Ladders

29 CFR 1904, 1910, 1926, and 1929

Lockout/tagout kit

Materials to clean a respirator

Several sample MSDSs, including:

PVC adhesive MSDS

Concrete dust MSDS

Sample safety plan

Sample safety signs

Hand and power tools:

Bladed

Impact

Power

Electrically powered

Liquid fuel

Demolition saw

Skill saw

Reciprocating saw

Power drill

Gas detection meter

Sample of intrinsically safe/explosion-proof equipment

Copies of Figure 36

Sample emergency action plans

Module Examinations

Performance Profile Sheets

### **MODULE 02103-05 – PLUMBING TOOLS (7.5 Hours)**

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

Plumber's toolbox

Damaged and unsafe tools

Measuring and layout tools

Variety of squares, including:



Speed  
Combination  
Framing  
Levels and precision measuring tools  
Sections of iron pipe  
Torpedo levels  
Plumb bobs  
Sections of vertical pipe  
Chalk lines  
Tooth-edged cutting tools, including:  
    Hacksaws  
    Reciprocating saws  
    Portable band saws  
    Abrasive saws  
Saw blades: 18, 14, and 32 teeth per inch  
Damaged saws  
Wood and cold chisels  
Chisel with mushroomed head  
Variety of smooth-edged cutting tools  
Keel crayon  
Soapstone  
Variety of drills, including:  
    Portable electric  
    Offset  
    Cordless  
    Drill bits  
    Die tool sets  
    Soldering tools  
Variety of wrenches, including:  
    Pipe  
    Pipe tongs  
    Strap  
    Spud  
    Open-end  
    Adjustable  
    Basin  
    Monkey  
Torque  
Pliers  
Damaged hammers  
Maul  
Wood-splitting wedge  
Sections of wood



Hollow-shank screwdriver  
Bits  
Vises  
Module Examinations  
Performance Profile Sheets

### **MODULE 02104-05 – INTRODUCTION TO PLUMBING MATH (7.5 Hours)**

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  
Piece of wood  
Handsaw  
Calculators  
Sections of pipe  
Measuring tools  
Module Examinations  
Performance Profile Sheets

### **MODULE 02105-05 – INTRODUCTION TO PLUMBING DRAWINGS (12.5 Hours)**

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  
Complete set of construction drawings  
Sample specifications and their corresponding drawings  
A variety of scales, including:  
    Architect's scale  
    1/4 scale  
    Engineer's scale  
    Metric scale



Drafting paper to sketch isometric drawings  
Module Examinations  
Performance Profile Sheets

### **MODULE 02106-05 – PLASTIC PIPE AND FITTINGS (10 Hours)**

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  
Flexible pipe  
Pipe labels  
Sections of plastic pipe, including:  
    ABS (acrylonitrile-butadiene-styrene)  
    PVC (polyvinyl chloride)  
    CPVC (chlorinated polyvinyl chloride)  
    PE (polyethylene)  
    PEX (cross-linked polyethylene)  
    PB (polybutylene)  
Sample material safety data sheets (MSDS) for plastic pipe  
Tools for measuring  
Tools for cutting pipe  
Deburring tools  
Miter box  
Plastic saw for cutting PVC pipe  
CPVC or PVC cement or all-purpose cement conforming to ASTM F-493 standards  
PVC bell-and-spigot pipe  
Lubricant  
Tools used to join PEX tubing, including:  
    Insert and crimp-ring system  
    Tubing cutter  
    Hand-crimping tool  
    Go-no-go gauge  
Cutter designed for plastic tubing  
PEX ring  
Expander tool  
Mechanical joints and clamps  
Compression collars



Tools for the butt-fusion method, including:

- Temperature indicator stick
- Heating tool
- Fusion timer

- Socket face
- Cold ring

*Manufacturers Standardization Society's MSS40 hanger standard*

*National Fire Protection Association (NFPA) Chapter 13*

Module Examinations

Performance Profile Sheets

Copies of Quick Quiz

### **MODULE 02107-05 -- COPPER PIPE AND FITTINGS (10 Hours)**

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

Access to a fire extinguisher

Sections of copper pipe

Tee-pulling tool

Fittings and valves, including:

- Water supply fittings

- Water supply valves

- DWV fittings

- Alternative fittings

Tools for measuring copper pipe

Copper cutter

Handheld tube cutter

Internal tube cutter

Sizing tool

Tools to form sweat joints, compression joints, and flare joints

Variety of soldering tools, including an acetylene torch

Tools to roll groove and cut groove copper pipe

Pipe attachments for wood-frame construction

*National Fire Protection Association (NFPA) Chapter 13*

*Manufacturers Standardization Society MSS40 hanger standards*



Pressure gauge  
Test plug  
Module Examinations  
Performance Profile Sheets

### **MODULE 02108-05 – CAST-IRON PIPE AND FITTINGS (12.5 Hours)**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Cast-Iron Soil Pipe Institute (CISPI) handbook  
Sections of hub-and-spigot pipe (single and double hub) in a variety of sizes  
Sections of no-hub pipe in a variety of sizes  
A variety of fittings with manufacturer labels  
A variety of bends, including:  
    Long bends  
    Sweeps  
    Heel inlets  
    Closet bends  
    Closet flanges  
A variety of branches, including:  
    Wyes  
    Double wyes  
    Sanitary tees  
    Double sanitary tees  
    Sanitary crosses  
Increaseers  
Traps  
Folding rule  
Tape measure  
Soil pipe cutter  
Neoprene gasket  
Chain puller, lead hammer, or pushing bar  
Rubber lubricant  
Oakum fiber (white and brown)  
Yarning iron  
Running rope



Spring clamp  
Lead pot and ladle  
Packing iron  
A variety of caulking irons  
Pick-out iron  
Ball-peen hammer

Couplings  
Torque wrench  
Sway braces  
*2003 International Building Code*

Screws, lag screws, or large nails for wooden structures  
Beam clamps or C-clamps for metal structures  
Expansion anchors or threaded masonry fasteners  
Rotary hammer drill  
Module Examinations  
Performance Profile Sheets  
Copies of Quick Quiz

### **MODULE 02109-05 – CARBON STEEL PIPE AND FITTINGS (10 Hours)**

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  
Sections of ASTM-approved pipe  
Steel pipe in different sizes  
Steel pipe fittings  
Steel pipe cutter  
Ground joint union  
A variety of couplings and fittings  
Globe, gate, ball, and stop-and-waste valves  
Threaded pipe  
Threading die and stock  
Cutting oil  
Tape measure  
Marking tool





Two pipe wrenches of appropriate size  
Hand and power threaders  
Straight, offset, and compound-leverage pipe wrenches  
Hand die and stock  
Pipe joint compound and sealant tape  
*NFPA Chapter 13*  
*MSS40* hanger standards

Pipe attachments, including supports, channels, and clamps  
Connectors  
Structural attachments  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02110-05 – CORRUGATED STAINLESS STEEL TUBING (2.5 Hours)**

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  
Sections of corrugated stainless steel tubing by a variety of manufacturers  
Tube cutters  
Tee fittings  
Appliance regulator  
Examples of fuel gas codes and standards  
Straight fittings  
Coupling fittings  
Bushings  
Tools to install and assemble fittings  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02111-05 – FIXTURES AND FAUCETS (5 Hours)**

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

A variety of porcelain, cast iron, sheet steel, stainless steel, and plastic fixtures

Faucet for wheelchair-accessible lavatory

Electric eye

A variety of flushing devices

Directional tee with an internal baffle

*Americans with Disabilities Act of 1990 (ADA) Standards for Accessible Design*

A variety of photos of fixtures

Module Examinations

Performance Profile Sheets

Copies of Quick Quiz

### **MODULE 02112-05 – INTRODUCTION TO DRAIN, WASTE, AND VENT (DWV) SYSTEMS (10 Hours)**

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

DWV system design drawings

P-traps

Copies of *Figure 8* with the callouts covered

Drainage fittings made from a variety of materials

DWV fittings, including:

Bends

Adapters

Cleanouts

Tees

Wyes

Increasers

Offsets

Torpedo level

Plans for a municipal waste treatment plant



Plans for a private waste disposal system

Module Examinations  
Performance Profile Sheets

**MODULE 02113-05 – INTRODUCTION TO WATER DISTRIBUTION SYSTEMS (10 Hours)**

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 *Figure 4* with the callouts covered  
Sample water distribution piping diagram

Attachments, including:

- Stems
- Discs
- Seat rings
- Disc holders or guides
- Wedges
- Bushings

A variety of valves, including:

- Gate valves
- Globe valves
- Angle valves
- Ball valves
- Check valves
- Pressure regulator valves
- Supply stop valves
- Temperature and pressure relief valves

Drafting paper  
Module Examinations  
Performance Profile Sheets

**Level Two**

**MODULE 02201-05 – PLUMBING MATH TWO (15 Hours)**



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  
Scientific (trigonometric) calculator  
Framing square  
Tape measure  
Folding rule  
Wooden rule  
Chalk  
Several 2 x 4s  
Module Examinations  
Performance Profile Sheets

### **MODULE 02202-05 – READING COMMERCIAL DRAWINGS (20 Hours)**

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  
Commercial drawings:  
Civil drawings (site plans)  
Architectural drawings  
Structural drawings  
Mechanical drawings  
Plumbing drawings  
Electrical drawings  
Sample contractual documents:  
    Addenda  
    Change orders  
    RFIs  
    Clarifications



Blank RFI forms

Sample worksheet drawings:

Floor plans and corresponding schedules

drawing of a supply and DWV system

Plumbing plans and corresponding schedules and isometric drawings

Plumbing plans and corresponding approved submittal data and cut sheets

Coordination drawings

As-built drawings

Drawing paper

Module Examinations

Performance Profile Sheets

### **MODULE 02203-05 – HANGERS, SUPPORTS, STRUCTURAL PENETRATIONS AND FIRE STOPPING (10 Hours)**

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

Calculators

A variety of pipe attachments

Notched steel clamps and standard channels

A variety of connectors

Reducing rod coupling

Two threaded support rods of different sizes

Powder-actuated fastening tool

Published guidelines for powder-actuated fastening tool

Concrete inserts, support rods, and appropriate nuts

Engineer's specifications for hanger installation

Sections of floor joists

Sections of pipe

Tools and materials for drilling

Tools and materials for notching

Approved and unapproved fire-stopping materials and sealants

Steel collar lined with an intumescent block

Tools and materials to box floor joists

Tools and materials to add furring strips

Tools and materials to build a chase



A news article highlighting the importance of fire-stopping materials  
Module Examinations  
Performance Profile Sheets

**MODULE 02204-05 – INSTALLING AND TESTING DWV PIPING (25 Hours)**

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  
Plans and fixture rough-in sheets  
Rough-in book  
Sample material takeoff forms  
Floor plans  
Manufacturers' rough-in sheets  
Variety of carrier fittings  
Variety of carriers used to support urinals and other fixtures  
Variety of lavatory and sink carriers  
Blocking materials  
Job/project specifications  
Sample plot plans  
General-purpose level  
Builder's level  
Stadia rod  
Plumb bob  
Basic framing  
DWV stack  
Fixture drains  
Variety of fittings  
Tools to complete a DWV installation  
Sample architectural plans without the fixture locations marked  
Drawing paper  
Daily log  
Testing tools and equipment  
Module Examinations  
Performance Profile Sheets

**MODULE 02205-05 – INSTALLING ROOF, FLOOR, AND AREA DRAINS (5 Hours)**



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  
Roof, floor, and area drains  
Copies of plans and specifications  
Surveyor's level  
Straight board  
String line  
Copies of *Figure 18* with the callouts covered  
Tools used to cut roof openings  
Sections of roof deck  
Flashing or a waterproof membrane  
Tools to install drains  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **MODULE 02206-05 – TYPES OF VALVES (5 Hours)**

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  
Copies of the valve cross section in *Figure 3* with the callouts covered  
Copies of the valve drawing in *Figure 5* with the callouts covered  
Copies of *Figure 12* with the callouts covered  
Float valve assembly  
Variety of packing materials  
Variety of valves, including the following:  
    Gate  
    Globe  
    Angle



Ball  
Butterfly  
Check  
Flush-o-meter  
Flush  
Plug  
Temperature and pressure (T/P)  
Pressure regulator  
Supply stop  
Float-controlled  
Backwater

Flush-o-meter and float-controlled valve repair kits and faulty flushometer and float-controlled valves

A variety of other faulty valves  
Tools to repair valves  
Module Examinations  
Performance Profile Sheets

### **MODULE 02207-05 – INSTALLING AND TESTING WATER SUPPLY PIPING (20 Hours)**

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  
Construction plans  
Takeoff drawings  
Approved submittal data  
Fixture rough-in sheets  
Job specifications  
Copies of an inspector's test record  
Variety of meters larger than 1 1/2 inches in diameter  
Tools to plumb and set the meters  
Sizing tables  
Pipe sleeves  
Sections of pipe  
Backing boards  
Ells





Module Examinations  
Performance Profile Sheets

### **MODULE 02208-05 – INSTALLING FIXTURES, VALVES, AND FAUCETS (20 Hours)**

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

Variety of fixtures  
Cardboard cartons to protect fixtures  
Bathtub  
Blocking  
Variety of valves, including threaded valves, soldered valves, solvent-welded valves, flanged valves, and compression connection valves  
Valves for water closets, including float-controlled valves and manual flush valves  
Variety of threaded valves  
Teflon® tape or pipe dope  
Pipe-reaming tool  
Copper-cleaning tool  
CPVC primer and solvent  
Stubout  
Copies of *Figures 11, 12, and 13* with callouts covered  
Flushometer control stop  
Manufacturer's instructions for a variety of valves  
Uncut countertop  
Rim-mounted sink  
Fixture sealant  
Lift rod assembly  
Manufacturer's instructions for lavatories, sinks, and pop-up drains  
New water closets and urinals  
Tools to install fixtures, valves, and faucets  
Copies of the Quick Quiz  
Module Examinations  
Performance Profile Sheets



## **MODULE 02209-05 – INTRODUCTION TO ELECTRICITY (15 Hours)**

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  
Current edition of the *National Electrical Code*® (NEC®)  
Copy of *NFPA 70*  
Voltmeter  
Variety of insulated tools  
Variety of magnets and magnetic objects  
In-line and clamp-on ammeters

Voltage meters  
Ohmmeters  
Variety of wiring diagrams, including the following:  
    Wiring diagrams  
    Simplified schematic diagrams  
    Ladder diagrams  
    Manufacturer's component location diagrams  
    Circuit diagrams  
Variety of switches  
Variety of fuses  
Variety of relays  
Variety of overload protection devices  
Circuit board  
Digital readout  
Immersion element  
Anode  
Manufacturer's instructions for an electric water heater  
Module Examinations  
Performance Profile Sheets

## **MODULE 02210-05 – INSTALLING WATER HEATERS (5 Hours)**

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  
Manufacturers' instructions for installing water heaters  
Copies of *Figure 6* with the callouts covered  
Water heater specifications  
Dip tube  
Anti-siphon tube  
Copies of *Figure 17* with the callouts covered  
Drip lines  
A variety of safety pans  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02211-05 – FUEL GAS SYSTEMS (20 Hours)**

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  
*National Fire Prevention Association (NFPA)* standards that apply to fuel gas and fuel oil  
Manufacturer's instructions and product warranties  
Manufacturer's installation procedures for a variety of appliances  
Manometer  
Variety of appliance labels  
Anode and cleaning materials  
Float gauge  
Plumbing drawings  
Gas supplier installation information  
Pump manufacturer's specifications  
Approved fire-stopping materials  
Module Examinations  
Performance Profile Sheets



## **MODULE 02212-05 – SERVICING OF FIXTURES, VALVES, AND FAUCETS (5 Hours)**

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  
Globe valve  
Wrench  
Screw extractor  
Valves with broken screws  
Variety of sizes and shapes of preformed packing  
Tools to repair globe and angle valves and compression faucets  
Flush-o-meter repair kit

Float-controlled valve repair kit  
Balancing valve  
T&P valve  
Worn spout O-ring  
Old water filter  
Water filter cartridges and accompanying manufacturer's instructions  
Electronic controls, batteries, and accompanying manufacturer's instructions  
Variety of faulty globe, gate, flushometer, and float-controlled valves, as well as repair kits and accompanying manufacturer's instructions  
Variety of faulty tank flush, balancing, and temperature and pressure (T&P) valves, as well as repair kits and accompanying manufacturer's instructions  
Variety of faulty faucets  
Module Examinations  
Performance Profile Sheets

### **Level Three**

## **MODULE 02301-06 – APPLIED MATH (17.5 Hours)**

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

Sketch paper  
English ruler, yardstick, gallon jug, measuring cup, and hand weights  
Water  
Calculators  
String and ruler  
Liquid, bimetallic, and electrical thermometers  
Examples of an inclined plane, lever, pulley, wedge, screw, and wheel and axle  
Wrench  
Doorstop  
Drill bit  
Valve with a wheel handle  
Section of pipe, friction caps, water, hairdryer or blowtorch (optional)  
TV/VCR (optional)  
*Explosion Danger Lurks* videotape (optional)  
Two 4-inch pipes of different diameters, caps for the bottom end of each (optional)  
Assorted blocks, levers, wheels, and twine (optional)  
Module Examinations

### **MODULE 02302-06 – SIZING WATER SUPPLY PIPING (17.5 Hours)**

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  
Calculators  
Bucket of water  
Basin  
Copies of blueprints that include plumbing drawings  
Copies of *Table 1* (optional)  
Copies of two of the standards cited in your local code (optional)  
Isometric drawings of a water supply piping system (optional)  
Copies of Quick Quiz (optional)  
Module Examinations



Performance Profile Sheet

**MODULE 02303-06 – POTABLE WATER TREATMENT (15 Hours)**

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

Microscope

Assorted slides prepared with drops of water

Samples of liquid and solid chlorine

Diaphragm pump chlorinator

Injector chlorinator

Tablet chlorinator

Mechanical filter

Neutralizing filter

Oxidizing filter

Oxidizing agent

Alum

Test kit for iron contamination with appropriate water samples

Test kit for acidity with appropriate water samples

Copies of Quick Quiz (optional)

Module Examinations

Performance Profile Sheets

**MODULE 02304-06 – BACKFLOW PREVENTERS (20 Hours)**

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

Appropriate tools for assembling and disassembling various types of backflow preventers

Various types of backflow preventers with manufacturer's instructions, including:



Atmospheric vacuum breaker (AVB)  
Pressure-type vacuum breaker (PVB)  
Double-check valve assembly (DCV)  
Dual-check valve backflow preventer (DC)  
Reduced-pressure zone principle backflow preventer (RPZ)

Copies of Quick Quiz (optional)  
Module Examinations  
Performance Profile Sheets

### **MODULE 02305-06 – TYPES OF VENTING (20 Hours)**

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  
Straw, glass, and container for water  
Selections from a model code other than the one on which your local code is based  
Access to several computers with Internet connections (optional)  
Copies of Quick Quiz (optional)  
Module Examinations  
Performance Profile Sheets

### **MODULE 02306-06 – SIZING DWV AND STORM SYSTEMS (20 Hours)**

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  
Calculators  
Module Examinations  
Performance Profile Sheets

### **MODULE 02307-06 – SEWAGE PUMPS AND SUMP PUMPS (17.5 Hours)**



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  
Calculators  
Small sewage or storm water pump  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **MODULE 02308-06 – CORROSIVE-RESISTANT WASTE PIPING (7.5 Hours)**

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  
Glass pipe cutter  
Manufacturers' catalogs for plastic pipe

- Sections of pipe materials used for corrosive waste, including:
  - Borosilicate glass pipe, both beaded and plain end
  - Plastic pipe
  - Stainless steel pipe
- Silicon cast-iron pipe, both hub-and-spigot and no-hub styles
- Appropriate materials and tools to join the various types of piping, such as:
  - Couplings for borosilicate glass pipe
  - Several clean cloths
  - Water
  - Adhesives specific to the types of plastic pipe
  - Ratchet wrenches
  - Fusion fittings and equipment
  - Mechanical joints





Color version of the NFPA diamond  
Copies of *NFPA Standard 704*  
Several sample MSDSs  
Module Examinations  
Performance Profile Sheets

### **MODULE 02309-06 – COMPRESSED AIR (10 Hours)**

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  
Calculators  
Examples of equipment that use compressed air  
A variety of devices that reduce noise and vibration, including:  
    Intake silencers  
    Flexible metal hoses  
    Shock absorbing mounts  
Air throttle valve, air pressure regulator, and lubricator  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **Level Four**

### **MODULE 02401-06 – BUSINESS PRINCIPLES FOR PLUMBERS (15 Hours)**

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  
Calculators  
Copies of well written and poorly written estimates  
Sample invoices from various suppliers



Sample inventory forms showing data from previous inventories

Copies of *Figure 9*

Sample critical path management (CPM) diagram covering a large job or a substantial part of a large job

Copies of the handout "Pipe Specifications of the Government" (optional)

Project drawings and specifications, and copies of *Figures 1* through *3* (optional)

Copies of *Figure 12* (optional)

Module Examinations

Performance Profile Sheets

### **MODULE 02402-06 – INTRODUCTORY SKILLS FOR THE CREW LEADER (16 Hours)**

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

### **MODULE 02403-06 – WATER PRESSURE BOOSTER AND RECIRCULATION SYSTEMS (17.5 Hours)**

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

Copies of *Figures 4* and *7*

Small plastic bottle with two holes punched in the throat, on opposite sides, and a third hole punched in the

bottom. The bottle should have string tied through the pair of holes at the top, with the knot over the center

of the bottle. Leave about 3 feet of string attached.



Various components of a water booster system with manufacturer's instructions, including the following:

- Small storage tank
- Centrifugal water booster pump
- Vertical turbine pump
- Vibration isolators
- Temperature and flow sensors

Water hammer arresters

Appropriate tools for assembling and disassembling various types of water booster and recirculation systems

Pressure gauge

Copies of engineering plans for one or more types of water booster pressure systems (optional)

Copies of Quick Quiz (optional)

Module Examinations

Performance Profile Sheets

#### **MODULE 02404-06 – INDIRECT AND SPECIAL WASTE (12.5 Hours)**

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

Automatic trap primer

Small grease interceptor

Copies of site plans that illustrate the location of a large interceptor (optional)

Module Examinations

Performance Profile Sheets

#### **MODULE 02405-06 – HYDRONIC AND SOLAR HEATING SYSTEMS (15 Hours)**

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  
Copies of *Figure 1* with the callouts covered  
Copies of *Figures 11 through 15* with the callouts covered (optional)  
Module Examinations  
Performance Profile Sheets

### **MODULE 02406-06 – CODES (7.5 Hours)**

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  
Copies of *Figure 1* with callouts covered  
Saddle fitting plus additional fittings, piping materials, or other components prohibited by your local code  
(if any)  
Examples of actual code change proposals submitted to ICC or another model code organization  
Copies of *Figure 2*  
Copy of the model code on which the local code is based (optional)  
Copies of Quick Quiz (optional)  
Module Examinations  
Performance Profile Sheets

### **MODULE 02407-06 – SERVICING PIPING SYSTEMS, FIXTURES, AND APPLIANCES (22.5 Hours)**

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



Several articles from relevant trade journals that offer practical tips about servicing piping systems  
Sections of pipe, couplings, and mini tube cutters  
Water hammer arrester and pressure-reducing valve  
Schrader valve  
Assorted water filters  
Hand auger, power auger, various types and sizes of attachments for both, including a root-cutter, and a drain

Sections of corroded pipe  
Tank flush valves, including:  
    Flush valves with tank balls  
    Flush valves with flapper tank balls  
    Appropriate tools for assembling and disassembling flush valves  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02408-06 – PRIVATE WATER SUPPLY WELL SYSTEMS (10 Hours)**

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  
Copies of a drilling log

Copies of *Figure 7* with callouts removed and blank lines substituted  
Waterproof mechanical splice kit  
Submersible pumps and appropriate assembly tools  
Copies of *Figures 2* through *5* with their titles, which identify the wells, blocked out (If possible, enlarge to show greater detail) (optional)  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02409-06 – PRIVATE WASTE DISPOSAL SYSTEMS (10 Hours)**

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  
Distribution box  
Calculators

Section of perforated plastic distribution pipe, nylon screens, and section of flexible, corrugated, perforated pipe  
Copies of a system's design drawings, site plans, and soil quality data (optional)  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02410-06 – SWIMMING POOLS AND HOT TUBS (10 Hours)**

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  
Water supply fittings for swimming pools, as follows:  
    Vacuum fitting  
    Sidewall drain  
    Skimmer  
    Water supply fitting  
Floater, chlorine tablets, and basin of water  
Chlorine and pH test kits and samples of swimming pool water  
Copies of *Figure 14* with callouts covered (optional)  
Access to several computers with internet connections (optional)  
Module Examinations  
Performance Profile Sheets

#### **MODULE 02411-06 – PLUMBING FOR MOBILE HOMES AND TRAVEL TRAILERS (10 Hours)**

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  
Section of flexible pipe and quick-disconnect fitting of the same size  
Hose connection vacuum breaker and a sill cock

Copies of a plot plan for a mobile home park (optional)  
Module Examinations  
Performance Profile Sheets



**Pembroke/ Hopkins Park Community Outreach Program**

13355 E. 3000 S. Rd., Pembroke Township, IL 60958

Tel: (815) 944-8817 Fax: (815) 944-5675

**PLUMBING  
Performance Tasks**

**Level One**

**MODULE 02101-05 – INTRODUCTION TO THE PLUMBING PROFESSION (5 Hours)**

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

**MODULE 02102-05 – PLUMBING SAFETY (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Inspect the following personal protective equipment:
  - Gloves
  - Body harness
  - Hard hat
  - Safety glasses
  - Safety shoes
  - Hearing protection
2. Put on the following personal protective equipment:
  - Hard hat
  - Body harness
  - Respiratory protection
  - Eye protection
3. Demonstrate proper use of ladders.
4. Inspect the following power tools to ensure they are safe to use:
  - Demolition saw
  - Skill saw
  - Reciprocating saw
  - Power drill
5. Demonstrate/simulate the proper method of lockout/tagout.

**MODULE 02103-05 – PLUMBING TOOLS (7.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Identify basic measuring, layout, and cutting tools.





2. Identify basic drilling, boring, and reaming tools.
3. Identify hammers, screwdrivers, and vises introduced in this module.
4. Explain some of the basic care and maintenance procedures identified in this module.

#### **MODULE 02104-05 – INTRODUCTION TO PLUMBING MATH (7.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

Measure pipe using the following methods:

- End-to-end
- End-to-center
- Center-to-center
- End-to-face
- Face-to-face
- Face-to-throat

2. Determine end-to-end dimensions by figuring fitting allowances and thread makeup.

#### **MODULE 02105-05 – INTRODUCTION TO PLUMBING DRAWINGS (12.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Interpret and explain information from given drawings.
2. Obtain information about piping systems from the set of drawings provided with this module.
3. Make isometric sketches from other drawings
4. Explain the relationship among drawings, specifications, and the local plumbing code.

#### **MODULE 02106-05 – PLASTIC PIPE AND FITTINGS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Select correct types of materials for plastic piping systems.
2. Identify types of fittings and valves and their uses.
3. Select the appropriate personal protective equipment for working with plastic piping.
4. Properly measure, cut, and join plastic piping.
5. Select the correct hanger or support for the application.

#### **MODULE 02107-05 – COPPER PIPE AND FITTINGS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Select correct types of materials for copper piping systems.



2. Identify types of fittings and valves and their uses.
3. Select the appropriate personal protective equipment for working with copper piping.
4. Correctly measure, cut, ream, join, and groove copper piping.
5. Select the correct hanger or support for the application.

#### **MODULE 02108-05 – CAST-IRON PIPE AND FITTINGS (12.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Select correct materials for cast-iron piping systems.
2. Identify types of fittings and their uses.
3. Select the appropriate personal protective equipment for cast-iron piping.
4. Correctly measure, cut, and join cast-iron pipe.
5. Select the correct hanger or support and spacing for the application.

#### **MODULE 02109-05 – CARBON STEEL PIPE AND FITTINGS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Identify the common types of materials, schedules, sizes, and labels used for carbon steel piping.
2. Identify the common fittings and valves used with carbon steel piping.
3. Properly measure, cut, groove, and join carbon steel piping.
4. Identify the hazards and safety precautions associated with carbon steel piping.
5. Identify the various techniques used in hanging and supporting carbon steel piping.

#### **MODULE 02110-05 – CORRUGATED STAINLESS STEEL TUBING (2.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Simulate and/or demonstrate how to join corrugated stainless steel tubing.

#### **MODULE 02111-05 – FIXTURES AND FAUCETS (5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Identify the most commonly installed lavatories, tubs, sinks, and toilets.

#### **MODULE 02112-05 – INTRODUCTION TO DRAIN, WASTE, AND VENT (DWV) SYSTEMS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------



1. Sketch a simple DWV system, label its components, and size the pipe.

**MODULE 02113-05 – INTRODUCTION TO WATER DISTRIBUTION SYSTEMS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Identify the major components of a water distribution system, and describe the function of each component.

**Level Two**

**MODULE 02201-05 – PLUMBING MATH TWO (15 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Demonstrate the steps needed to calculate a 45-degree offset around an obstruction. Create a list of tools/ charts needed for this.
2. Determine the length of pipe with fittings installed after calculating the offset.
3. Draw a diagram that illustrates the difference between a simple and a rolling offset.
4. Using appropriate charts, calculate, fabricate, and install a 60-degree simple and parallel offset.
5. Calculate the rolling offset using a framing square.

**MODULE 02202-05 – READING COMMERCIAL DRAWINGS (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. using a site plan interpret or explain information as required by the instructor.
2. Write an RFI.
3. using the site plan provided locate plumbing entry points.
4. Use cut sheets and floor plans to lay out fixture rough-ins.
5. Do a material takeoff for DWV and water supply systems. Size the pipes according to the local code. Create an isometric drawing.

**MODULE 02203-05 – HANGERS, SUPPORTS, STRUCTURAL PENETRATIONS, AND FIRE STOPPING (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Install pipe hangers and supports for DWV and water supply systems according to local applicable codes and manufacturer's specifications.



2. Modify structural members using the appropriate tools and without weakening the structure.
3. Install common types of fire-stopping materials in penetrations through fire-rated structural members, walls, floors, and ceilings.

#### **MODULE 02204-05 – INSTALLING AND TESTING DWV PIPING (25 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Develop a material takeoff from a given set of plans.
2. Use plans and fixture rough-in sheets or rough-in book to determine location of fixtures and route of the plumbing.
3. Locate the stack within the structure.
4. Demonstrate an ability to install a DWV system using appropriate hangers and correct grade.
5. Modify structural members using the appropriate tools without weakening the structure following the applicable code.
6. Demonstrate the ability to correctly size and install a building sewer and a building drain, and final connection.
7. Test a DWV system according to code.

#### **MODULE 02205-05 – INSTALLING ROOF, FLOOR, AND AREA DRAINS (5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Use a surveyor's level or transit to determine the elevation of a floor or area drain.
2. Install roof, floor, and area drains.
3. Install waterproof membranes and flashing.

#### **MODULE 02206-05 – TYPES OF VALVES (5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Identify types of valves.
2. Identify parts of valves.
3. Identify applications of valves.

#### **MODULE 02207-05 – INSTALLING AND TESTING WATER SUPPLY PIPING (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Demonstrate the ability to locate a water meter.
2. Develop a water supply piping material takeoff from a given set of plans.



3. Using instructor-provided plans and fixture rough-in sheets, determine location of fixtures and route of the water supply piping.
4. Describe procedures for modifying a structural member without weakening it, using the appropriate procedures and codes.
5. Demonstrate the ability to correctly size and install a water service line including backflow preventer.
6. Describe how to properly test a water supply system.

#### **MODULE 02208-05 – INSTALLING FIXTURES, VALVES, AND FAUCETS (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Demonstrate how to protect fixtures after delivery and before occupancy.		
2.	Demonstrate the ability to install bathtubs, shower stalls, valves, and bath/shower faucets.		
3.	Demonstrate the ability to install lavatories, sinks, sink faucets, and pop-up drains.		
4.	Demonstrate the ability to install water closets, urinals, and test valves.		

#### **MODULE 02209-05 – INTRODUCTION TO ELECTRICITY (15 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Demonstrate use of an Ohmmeter.		
2.	Describe the difference between a series and a parallel circuit.		
3.	Demonstrate use of power formulas.		
4.	State and demonstrate performance requirements.		

#### **MODULE 02210-05 – INSTALLING WATER HEATERS (5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Identify and explain the basic functions of the components of water heaters.		
2.	Demonstrate how to install an electric water heater.		
3.	Demonstrate how to install a gas water heater.		

#### **MODULE 02211-05 – FUEL GAS SYSTEMS (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Properly connect appliances to the fuel gas system.		
2.	Design, size, purge, and test fuel gas systems.		



**MODULE 02212-05 – SERVICING OF FIXTURES, VALVES, AND FAUCETS (5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Diagnose the cause of problems in fixtures, valves, and faucets requiring repair or maintenance.		
2.	Repair fixtures using the proper tools and replacement parts.		
3.	Use manufacturer's instructions to disassemble and reassemble a valve.		

**Level Three**

**MODULE 02301-06 – APPLIED MATH (17.5 Hours)**

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

**MODULE 02302-06 – SIZING WATER SUPPLY PIPING (17.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Using design information provided by the instructor, lay out a water supply system.		
2.	Using design information provided by the instructor, calculate developed lengths of branches for a given water supply system.		

**MODULE 02303-06 – POTABLE WATER TREATMENT (15 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Flush out visible contaminants from a plumbing system.		
2.	Disinfect a potable water plumbing system.		
3.	Identify the basic equipment necessary to solve specific water quality problems.		
4.	Install water-conditioning equipment.		

**MODULE 02304-06 – BACKFLOW PREVENTERS (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Install common types of backflow preventers.		

**MODULE 02305-06 – TYPES OF VENTING (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
1.	Install different types of vents.		



### **MODULE 02306-06 – SIZING DWV AND STORM SYSTEMS (20 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Calculate drainage fixture units for a plumbing system.
2. Size branch lines for plumbing fixtures.
3. Size waste stacks.
4. Size building drains and sewers.
5. Size vents according to local code.
6. Determine annual rainfall and 10-, 25-, and 100-year expectations.
7. Calculate the surface of a roof for storm system sizing.
8. Size conventional roof drainage systems for storm water removal.

### **MODULE 02307-06 – SEWAGE PUMPS AND SUMP PUMPS (17.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Install and adjust sensors, switches, and alarms in sewage and sump pumps.
2. using a detailed drawing provided by the instructor, identify system components.
3. Install a sump pump.
4. Troubleshoot and repair sewage and sump pumps.

### **MODULE 02308-06 – CORROSIVE-RESISTANT WASTE PIPING (7.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Determine when corrosive-resistant waste piping needs to be installed.
2. Connect three different types of corrosive-resistant waste piping using proper techniques and materials.

### **MODULE 02309-06 – COMPRESSED AIR (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Install a basic compressed air system.
2. Identify components of compressed air systems.

### **Level Four**

### **MODULE 02401-06 – BUSINESS PRINCIPLES FOR PLUMBERS (15 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------



1. Prepare a material takeoff as part of an estimate.

**MODULE 02402-06 – INTRODUCTORY SKILLS FOR THE CREW LEADER (16 Hours)**

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

**MODULE 02403-06 – WATER PRESSURE BOOSTER AND RECIRCULATION SYSTEMS (17.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Install the basic components of a recirculation system.
2. Use the local plumbing code to find and cite requirements for recirculation systems.

**MODULE 02404-06 – INDIRECT AND SPECIAL WASTE (12.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Identify and install an indirect waste system.
2. Identify and install an interceptor.

**MODULE 02405-06 – HYDRONIC AND SOLAR HEATING SYSTEMS (15 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Layout and build a hydronic or a solar heating system.

**MODULE 02406-06 – CODES (7.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Use the plumbing code recognized in your area to find and cite references.

**MODULE 02407-06 – SERVICING PIPING SYSTEMS, FIXTURES, AND APPLIANCES (22.5 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Trouble-shoot and repair water supply problems.
2. Trouble-shoot and repair water heater problems.
3. Trouble-shoot and repair DWV problems.





**MODULE 02408-06 – PRIVATE WATER SUPPLY WELL SYSTEMS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Assemble and disassemble given components for private water supply well systems.

**MODULE 02409-06 – PRIVATE WASTE DISPOSAL SYSTEMS (10 Hours)**

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

**MODULE 02410-06 – SWIMMING POOLS AND HOT TUBS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Calculate volume and turnover rate of a pool using your local code.
2. Identify components of piping for a spa (match this exercise with *Figure 14*).

**MODULE 02411-06 – PLUMBING FOR MOBILE HOMES AND TRAVEL TRAILERS (10 Hours)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
--------------------	-------------	----------------	--------------------

1. Lay out a mobile home park for a minimum of 10 units.