

PIPEFITTING: Level One

08101-06 Orientation to the Trade (5 Hours)

Provides a comprehensive overview of work performed by the pipefitter, as well as pipefitter responsibilities, career opportunities, and safety principles associated with the pipefitting trade.

08102-06 Pipefitting Hand Tools (20 Hours)

Covers general hand tool safety as well as procedures for selecting, inspecting, using, and maintaining hand tools used by pipefitters. Coverage includes pipe wrenches, pipe stands, pipe vises, levels, pipe fabrication tools, pipe bending tools, and pipe joining tools.

08103-06 Pipefitting Power Tools (15 Hours)

Covers general power tools safety as well as procedures for selecting, inspecting, using, and maintaining power tools used by pipefitters. Provides guidelines for using electrical and pneumatic tools, including pipe threading machines.

08104-06 Oxyfuel Cutting (17.5 Hours)

Explains the safety requirements for oxyfuel cutting. Identifies oxyfuel cutting equipment and provides instructions for setting up, lighting, and using the equipment. Includes straight line cutting, piercing, beveling, washing, and gouging.

08105-06 Ladders and Scaffolds (12.5 Hours)

Covers hazards and safety procedures governing the use of stepladders, extension ladders, fixed scaffolds, and rolling scaffolds. Includes general procedures for scaffold assembly and use.

08106-06 Motorized Equipment (10 Hours)

Explains the safety factors, operator maintenance, and operating procedures associated with motorized equipment use on job sites, including electrical generators, air compressors, aerial lifts, pumps, forklifts, and hydraulic cranes.

PIPEFITTING: Level Two

08201-06 Piping Systems (5 Hours)

Introduces chemical, compressed air, fuel oil, steam, and water systems. Explains how to identify piping systems according to color codes.

08202-06 Drawings and Detail Sheets (15 Hours)

Introduces the trainee to plot plans, structural drawings, elevation drawings, P&IDs, isometric drawings, spool sheets, and detail sheets.

08203-06 Identifying and Installing Valves (20 Hours)

Identifies and provides installation methods for different types of valves. Also covers valve storage and handling.

08204-06 Pipefitting Trade Math (15 Hours)

Explains how to use ratios and proportions, solve basic algebra, area, volume, and circumference problems, and solve for right triangles using the Pythagorean theorem.

08205-06 Threaded Pipe Fabrication (15 Hours)

Describes the materials used in threaded piping systems. Explains how to determine pipe lengths between threaded pipe fittings, prepare the pipe and fittings for fit-up, and assemble the piping system.

08206-06 Socket Weld Pipe Fabrication (25 Hours)

Describes the materials used in socket weld piping systems. Explains how to determine pipe lengths between socket weld fittings, prepare the pipe and fitting for fit-up, and fabricate socket weld fittings.

08207-06 Butt Weld Pipe Fabrication (37.5 Hours)

Describes the materials used in butt weld piping systems. Explains how to determine pipe lengths between butt weld fittings, prepare the pipe and fittings for fit-up, and fabricate butt weld fittings. Also describes how to select and install backing rings, fabricate channel iron welding jigs, and use and care for welding clamps.

08208-06 Excavations (10 Hours)

Explains the use of shoring materials per OSHA standards and covers shoring systems, installing a hydraulic vertical shore, determining the overall fall of a sewer line, setting the grade and elevation of a trench, and backfilling.

08209-06 Underground Pipe Installation (20 Hours)

Explains pipe installation procedures and guidelines, including the procedures for cast iron, ductile iron, concrete, carbon steel, fiberglass, and thermoplastic pipe. Includes an introduction to horizontal directional drilling for pipe installation.

PIPEFITTING: Level Three

08301-07 Rigging Equipment (10 Hours)

Describes the use and inspection of basic equipment and hardware used in rigging, including slings, wire rope, chains, and attaching hardware. Explains sling angles. Describes the use of tuggers, jacks, hoists, and come-alongs.

08302-07 Rigging Practices (10 Hours)

Describes basic rigging and crane hazards and related safety procedures. Provides an overview of personnel lifting and lift planning. Introduces crane load charts and load balancing. Includes instructions for rigging and lifting pipe.

08303-07 Standards and Specifications (7.5 Hours)

Explains how to read and interpret pipefitting standards, codes, and specifications. Describes how to identify pipe and components according to specifications.

08304-07 Advanced Trade Math (20 Hours)

Discusses the use of equivalent and conversion tables. Explains how to use right angle trigonometry to calculate take-outs.

08305-07 Motorized Equipment II (10 Hours)

Covers the applications and safety requirements of drain cleaners, manlifts, and cable lifts.

08306-07 Introduction to Aboveground Pipe Installation (20 Hours)

Identifies various types of pipe, flanges, gaskets, and bolts. Includes step-by-step procedures for installing pipe sleeves and floor penetrations.

08307-07 Field Routing and Vessel Trim (10 Hours)

Explains how to secure the work area and determine field run specifications, load weights for erections equipment, and support needs. Covers how to erect vessel trim.

08308-07 Pipe Hangers and Supports (25 Hours)

Explains how to identify, select, and install pipe hangers and supports, including spring can supports.

08309-07 Testing Piping Systems and Equipment (20 Hours)

Explains how to perform pretests, service flow tests, head pressure tests, hydrostatic tests, and steam blow tests.

PIPEFITTING: Level Four

08401-07 Advanced Blueprint Reading (50 Hours)

Prepares the pipefitting trainee to work with blueprints used in the shop and in the field. This module presents the skills needed to derive necessary construction information from P&IDs, general arrangement drawings, ISOs, and spool sheets. As a practical application, trainees are given step-by-step instructions for following a line of pipe through a set of drawings. Includes nine 11" x 7" blueprints.

08402-07 Advanced Pipe Fabrication (50 Hours)

Discusses how to lay out and fabricate mitered bends, laterals, wyes, and ninety-degree intersections using tables of ordinates or a calculator. This knowledge is required in order to fabricate specialty bends and intersections.

08403-07 Stress Relieving and Aligning (15 Hours)

When piping is assembled, stresses from welds can result in misalignment and pipe strain, which can be compounded at the point of attachment to the pumps. The purpose of this module is to teach the nature of misalignment and methods of correcting it. Includes terminology that will help pipefitters communicate with millwrights who perform pump setup.

08404-07 Steam Traps (15 Hours)

In steam systems, condensate can damage valves and fittings and reduce the efficiency of the system. Steam traps release the condensate, either to the atmosphere or by returning it to reheaters. This module describes types of steam traps, how they function, and the basic methods for troubleshooting them.

08405-07 In-Line Specialties (10 Hours)

Describes the various specialty devices that are used in pipelines, including: bleed rings; ball and expansion joints; measuring devices for temperature, level, flow rate, and pressure; steam traps; drip legs; and desuperheaters. The purpose and function of each type is explained.

08406-07 Special Piping (25 Hours)

Discusses methods of assembling copper and plastic pipe and tubing. Introduces brazing and soldering, and explains the differences between these two procedures. Also describes compression and flared fittings, and grooved and compression formed joining methods.

08407-07 Hot Taps (10 Hours)

Hot tapping is a common requirement, although rarely performed by most pipefitters. Trainees learn how to prepare for the work to be done by the hot tap specialist. The mechanics of attaching fittings to the pipeline while the line is under pressure is explained. Covers line stopping, freeze stopping, and adding connections to the line.

08408-07 Maintaining Valves (10 Hours)

Explains how to replace packing and O-rings, and how to open and close a valve's bonnet. Discusses how to safely troubleshoot and maintain several types of valves.

08409-07 Introduction to Supervisory Roles (7.5 Hours)

Offers basic information for pipefitters who have a desire to move into supervisory roles. Provides information on issues related to cultural differences, gender-based social behaviors, and legal and ethical situations that a supervisor is likely to encounter.