

PIPEFITTING: Level One

08101 Pipefitting Hand Tools (20 Hours)

Covers general hand tool safety and procedures for identifying, selecting, inspecting, using, and caring for pipe vises and stands, pipe wrenches, levels, pipe fabrication tools, and pipe bending and flaring tools.

08102 Pipefitting Power Tools (15 Hours)

Identifies hazards and explains general safety procedures that must be followed when using power tools, and explains specific guidelines for using electric and pneumatic power tools.

08103 Threaded Pipe Fabrication (15 Hours)

Identifies the various materials used in threaded piping systems and explains the types and uses of various screwed fittings.

08104 Ladders and Scaffolds (10 Hours)

Covers hazards and general safety procedures governing the use of stepladders, straight and extension ladders, fixed scaffolds, and rolling scaffolds.

08105 Motorized Equipment (10 Hours)

Explains the applications, proper use, and safety considerations for using engine-driven generators, welding machines, air compressors, pumps, forklift trucks, and hydraulic cranes.

08106 Excavations (10 Hours)

Provides excavation design hazards and personal safety requirements as governed by OSHA regulations. Properties and classifications of soils, sloping requirements, excavation support systems, and backfilling requirements are discussed.

08107 Underground Pipe (12.5 Hours)

Provides the size, classifications, fittings, joining methods, and storage and handling requirements for underground pipe.

PIPEFITTING: Level Two

08201 Intermediate 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 grade and elevation of a trench, and backfilling.

08202 Underground Pipe Installation (20 Hours)

Explains installation procedures and guidelines including procedures for cast-iron pipe, ductile iron pipe, vitrified clay pipe, concrete pipe, carbon steel pipe, fiberglass pipe, and thermoplastic pipe.

08203 Drawings and Detail Sheets (12.5 Hours)

Introduces the trainee to plot plans, structural drawings, elevation drawings as-built drawings, equipment arrangement drawings, P&IDs, isometric drawings, spool sheets, and detail sheets.

08204 Piping Systems (5 Hours)

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

08205 Pipefitting Trade Math (15 Hours)

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

08206 Socket Weld Pipe Fabrication (12.5 Hours)

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

08207 Butt Weld Pipe Fabrication (45 Hours)

Covers how to prepare pipe ends for welding, determine the lengths between butt weld fittings, select and install backing rings, fabricate channel iron welding jigs, use and care for welding clamps, and fabricate various types of butt weld fittings to pipe.

08208 Rigging (17.5 Hours)

Explains how to select, inspect, use, and maintain a block and tackle, chain hoist, come-along, jack, and tugger.

08209 Pipe Hangers and Supports (15 Hours)

Describes pipe hangers and supports found on the job site, teaches how to read and interpret pipe support drawings and symbols, and explains how to determine field placement of hangers.

PIPEFITTING: Level Three

08301 Advanced Blueprint Reading (15 Hours)

Explains how to read plot plans, equipment location plans, P&IDs, piping orthographic drawings, structural steel plans, piping ISOs, and detail sheets. Also covers how to interpret line indexes, drawing indexes, and instrument summaries. A complete set of blueprints is included with the Trainee Module.

08302 Standards and Specifications (7.5 Hours)

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

08303 Advanced Trade Math (20 Hours)

Explains thermal expansion, the use of tables of equivalents and conversion tables, how to perform right angle trigonometry.

08304 Motorized Equipment (15 Hours)

Explains the use and safety requirements of hydrostatic pumps, hydroblaster pumps, drain cleaners, pipeline side boom tractors, manlifts, and cable lifts.

08305 Introduction to Aboveground Pipe Installation (20 Hours)

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

08306 Identifying and Installing Valves (20 Hours)

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

08307 Field Routing and Vessel Trim (15 Hours)

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

08308 Spring Can Supports (10 Hours)

Explains how to identify and select spring can supports. Includes step-by-step procedures for installing and maintaining spring can supports.

08309 Testing Piping Systems and Equipment (20 Hours)

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

08310 Basic Plumbing (12.5 Hours)

Covers drainage fixture unit ratings, the use of various fixtures and floor drains, and procedures for assembling cast-iron soil pipe with lead-and-oakum joints, compression joints, and no-hub joints.

PIPEFITTING: Level Four

08401 Planning Work Activities (7.5 Hours)

Covers how to plan and coordinate work activities, perform material take-outs, and secure equipment and materials. Explains the sequence of operations specific to a task and how to field-verify an installation.

08402 Advanced Pipe Fabrication (50 Hours)

Presents various piping offsets: three-line, 45-degree, equal spread offsets around a vessel, and three-line, 45-degree, unequal offsets. Also covers how to fabricate tank coils; three, four, and five-piece mitered turns; 45-degree laterals using both references; and contour markers, dummy legs out of both pipe and structural steel, and mitering procedures.

08403 Performing NDE Testing (15 Hours)

Explains how to identify the potential hazards for testing and types of NDE testing. Also discusses how to prepare welds for NDE testing and how to perform visual inspections.

08404 Stress Relieving and Aligning (10 Hours)

Explains thermal expansion and methods of stress-relieving, including preheating, interpass heating and postheating. Also shows how to perform stress-relief and dry washing weld procedures to align pipe flanges to equipment nozzles.

08405 Steam Traps (10 Hours)

Identifies types of steam traps, including mechanical, thermostatic, and thermodynamic steam traps, as well as strainers. Explains how to install steam traps and troubleshoot steam trap systems.

08406 In-Line Specialties (10 Hours)

Identifies potential hazards associated with in-line specialties as well as a variety of in-line specialties and their uses. Explains how to store and handle the various types of in-line specialties.

08407 Special Piping (25 Hours)

Explains how to assemble flared and compression joints using copper tubing; how to solder and braze joints, using copper tubing; and how to bend pipe to specified radius. Also explains how to install glass-lined pipe, hydraulic fitted compression joints, and grooved pipe couplings.

08408 Hot Taps (10 Hours)

Explains hot tap safety and potential hazards; how to identify and install the fittings used with hot taps; and how to operate a hot tap machine. Also covers how to identify and understand the use of different types of stopples.

08409 Maintaining Valves (10 Hours)

Explains how to remove and install threaded and flanged valves, how to replace valve stem O-ring and bonnet baskets, and how to repack a valve stuffing box. Also discusses the purpose of valve packing.