

#### 04207-08 Soldering (15 Hours)

Identifies soldering tools, materials, and techniques. Also provides trainees with a wide range of soldering tasks for practice.

#### 04208-08 Basic Piping Practices (7.5 Hours)

Reviews the methods for measuring, cutting, and joining selected types of pipe using fittings, hangers, and supports. Also reviews pipe materials and applications.

#### 04209-08 Fiberglass Duct (20 Hours)

Reviews fiberglass duct as well as layout and fabrication methods. Also discusses closure, hanging and support methods and how to repair major and minor damage to fiberglass duct.

## SHEET METAL III

#### 04301-09 Trade Math Three — Field Measuring and Fitting (15 Hours)

Describes the techniques used for field measuring and layout of duct runs and fittings. Also provides practice in solving field measuring problems.

#### 04302-09 Air Systems (10 Hours)

Reviews the operating principles, components, and applications of common air systems. Discusses constant volume systems, variable volume systems, variable temperature (VVT) systems, variable air volume (VAV) systems, and dual VAV systems.

#### 04303-09 Principles of Airflow (22.5 Hours)

Explains the basic principles of airflow and reviews how airflow is affected by duct size, shape, and fittings. Also reviews the components of an air distribution system.

#### 04304-09 Louvers, Dampers, and Access Doors (20 Hours)

Discusses the different types of louvers, dampers, and access doors used in air distribution systems and reviews the standards that apply to them.

#### 04305-09 Comprehensive Plan and Specification Reading (30 Hours)

Provides a case-study approach to learning how to use building plans and specifications to layout, fabricate, and install HVAC systems. Allows trainees to proceed through the module as if they were working on an actual building project. Includes construction drawings.

#### 04306-09 Fabrication Three — Triangulation (47.5 Hours)

Describes the principles of triangulation and how it can be used to measure duct run fittings. Provides trainees with a variety of tasks to practice developing, laying out, and fabricating selected duct run fittings.

#### 04307-09 Advanced Architectural Sheet Metal

(12.5 Elective Hours) Provides the opportunity to practice layout, fabrication, and installation of various architectural pieces. Makes use of items built in Fabrication Three—Radial Line Development.

## SHEET METAL IV

#### 04401-03 Shop Production and Organization (25 Hours)

Introduces trainees to the important production, organization, planning, and control functions that occur in a sheet metal shop. Includes discussions of project planning techniques, principles of efficient shop layout and materials flow, and the roles and relationships of shop personnel.

#### 04402-03 Air Balance (25 Hours)

Describes how to balance air distribution systems so that the right amount of air is correctly distributed at the proper velocities and returned to the heating and cooling units. Reviews the tools and techniques used for adjusting fans, volume dampers, registers, and grilles.

#### 04403-03 Louvers, Dampers, and Access Doors (20 Hours)

Discusses the different types of louvers, dampers, and access doors used in air distribution systems, and reviews the standards that apply to them. Includes several louver fabrication exercises.

#### 04404-03 Fume and Exhaust System Design (25 Hours)

Discusses effective and safe workspace ventilation. Introduces the trainees to applicable standards and regulations and reviews the many different types of hoods, filters, and duct designs used in fume and exhaust systems.

#### 04405-03 Fabrication Four: Comprehensive Review (40 Hours)

Offers twelve fabrication tasks that serve as a comprehensive review of parallel line, radial line, and triangulation pattern development methods.

#### 04406-03 (MT101) Introductory Skills for the Crew Leader (16 Hours)

Teaches the basic skills required to supervise personnel. Discusses principles of project planning and management and presents several case studies for student participation.

The Barr Construction Institute school admits students of any race, sex, color, religion, national or ethnic origin to all the rights, privileges, programs, activities, admission policies, education policies, scholarships and loan programs generally accorded or made to students at the school. All are encouraged to apply. ABC is an Equal Opportunity/Affirmative Action employer.



Any of these courses can be taught individually and not necessarily as a whole level.

## Sheet Metal

### I – IV



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# SHEET METAL I

**00101-09 Basic Safety** (12.5 Hours) Complies with OSHA-10 training requirements. Explains the safety obligations of workers, supervisors, and managers to ensure a safe workplace. Discusses the causes and results of accidents and the impact of accident costs. Defines safe work procedures, proper use of personal protective equipment, and working with hazardous chemicals. Identifies other potential construction hazards, including hazardous material exposures, welding and cutting hazards and confined spaces.

**00102-09 Introduction to Construction Math** (10 Hours) Reviews basic mathematical functions and explains their applications to the construction trades. Explains how to use and read various length measurement tools, including standard and metric rulers and tape measures, and the architect's and engineer's scales. Explains decimal-fraction conversions and the metric system, using practical examples. Also reviews basic geometry as applied to common shapes and forms.

**00103-09 Introduction to Hand Tools** (10 Hours) Introduces trainees to hand tools that are widely used in the construction industry, such as hammers, saws, levels, pullers, and clamps. Explains the specific applications of each tool and shows how to use them properly. Also discusses important safety and maintenance issues related to hand tools.

**00104-09 Introduction to Power Tools** (10 Hours) Provides detailed descriptions of commonly used power tools, such as drills, saws, grinders, and sanders. Reviews applications, proper use, safety, and maintenance. Many illustrations show power tools used in on-the-job settings.

**00105-09 Introduction to Construction Drawings** (10 Hours) Familiarizes trainees with basic terms for construction drawings, components, and symbols. Explains the different types of drawings (civil, architectural, structural, mechanical, plumbing-piping, electrical, and fire protection) and instructs trainees on how to interpret and use drawing dimensions. Four oversized drawings are included.

**00106-09 Basic Rigging** (15 Elective Hours) Explains how ropes, chains, hoists, loaders, and cranes are used to move material and equipment from one location to another on a job site. Describes inspection techniques and load-handling safety practices. Also reviews American National Standards Institute (ANSI) hand signals.

**00107-09 Basic Communication Skills** (7.5 Hours) Provides trainees with techniques for communicating effectively with co-workers and supervisors. Includes practical examples that emphasize the importance of verbal and written information and instructions on the job. Also discusses effective telephone and e-mail communication skills.

**00108-09 Basic Employability Skills** (7.5 Hours) Identifies the roles of individuals and companies in the construction industry. Introduces trainees to critical thinking and problem solving skills and computer systems and their industry applications. Also reviews effective relationship skills, effective self-presentation, and key workplace issues such as sexual harassment, stress, and substance abuse.

**00109-09 Introduction to Materials Handling** (5 Hours) Recognizes hazards associated with materials handling and explains proper materials handling techniques and procedures. Also introduces materials handling equipment, and identifies appropriate equipment for common job-site tasks.

**04101-08 Introduction to the Sheet Metal Trade** (5 Hours) Summarizes the history and development of the sheet metal trade, explains the benefits of apprenticeship training, and identifies career opportunities in the trade.

**04102-08 Tools of the Trade** (5 Hours) Describes the hand and power tools used in the sheet metal trade, including layout tools and cutting, bending, and forming machines. Includes safety and maintenance guidelines.

**04103-08 Introduction to Sheet Metal Layout and Processes** (7.5 Hours) Introduces parallel line development, radial line development, and triangulation. Covers selection and use of layout, hand, and machine tools. Discusses how to transfer patterns, and how to cut, form, and assemble parts.

**04104-08 Trade Math One** (20 Hours) Builds on trainees' basic math skills to solve trade-reproblems. Covers calculations using denomiand volume calculations, English-metric system covers basic geometry, and calculation of stretchouts.

**04105-08 Fabrication One – Parallel Line Development** (22.5 Hours) Covers the steps involved in using the parallel line development method to lay out fittings and includes step-by-step procedures for selected fittings.

**04106-08 Installation of Ductwork** (15 Hours) NEW! Addresses ductwork assembly, use of different types of sealants, using lifts, and installation of ductwork. Describes the types of fasteners (screws, nuts, bolts, and rivets), and supports used in an air distribution system. Discusses proper spacing of hangers, load ratings, and installation of hangers and support systems.

**04107-08 Installation of Air Distribution Accessories** (5 Hours) Describes how air distribution accessories, such as louvers, dampers, and access doors, function as part of an air distribution system. Includes installation guidelines and checklists.

**04108-08 Insulation** (7.5 Elective Hours) Describes how to install fiberglass blanket, foam, and pipe insulation using approved adhesives and fastening techniques. Also includes the fabrication and installation of fitting covers and preformed fitting covers.

**04109-08 Architectural Sheet Metal** (15 Elective Hours) Provides instruction in how to lay out and fabricate sheet metal components of a roof drainage system. Includes flashing, gutters, and downspouts.

# SHEET METAL II

**04201-08 Trade Math Two** (20 Hours) Demonstrates how to apply formulas to solve a variety of mathematical problems. Covers linear, area, volume, and angle measurement and percentage, ratio and proportion. Provides practical instruction in using protractors, venier calipers, and micrometers and in solving field measuring problems

**04202-08 Plans and Specifications** (20 Hours) Reviews how to read and interpret section, elevation and detail drawings. Also covers other specifications and other sources of project information. Includes 17 construction drawings.

**04203-08 Fabrication Two—Radial Line Development** (55 Hours) Introduces trainees to radial line development principles that are used to determine layouts for sheet metal fittings. Includes practice layout and fabrication tasks that allow trainees to develop and demonstrate their skills

**04204-08 Sheet Metal Duct Fabrication Standards** (7.5 Hours) Explains how to determine the various requirements for a duct system, including operating pressures, metal gauges, connectors, reinforcements, tie rods, and seams. Also reviews how to use standards, codes, and ordinances to design a duct system.

**04205-08 Air Properties and Distribution** (15 Hours) Explains the properties of air and how these properties relate to one another. Teaches how to use the gas laws, metal gauges, connectors, reinforcements, tie rods, and seams. Also reviews how to use standards, codes and ordinances to design a duct system.

**04206-08 Bend Allowances** (5 Hours) Provides instruction and practice in determining proper bend allowances in sheet metal. Also reviews the interplay of different factors that affect the amount of bend allowances needed and the methods for calculating allowances.