Sheet Metal

Sheet Metal Tools and Equipment (10 Hours)
(Module ID 04102) Describes the hand and power tools used in the sheet metal craft, including layout tools and cutting, bending, and forming machines. Includes safety and maintenance guidelines.

Sheet Metal Math and Measurements (20 Hours)
(Module ID 04104) Covers calculations using denominate numbers, area and volume calculations, English-metric system conversions, basic geometry, percentages, and calculation of stretchouts.

Sheet Metal Layout and Processes (17.5 Hours)
(Module ID 04103) Introduces parallelline development, radial line development, and triangulation. Covers the selection and use of layout, hand, and machine tools. Discusses how to transfer patterns, and how to cut, form, and assemble parts.

Parallel Line Development (27.5 Hours)
(Module ID 04105) Covers the steps involved in using the parallel line development method to lay out fittings. Includes step-by-step procedures for selected fittings.

Installation of Ductwork (15 Hours)
(Module ID 04106) 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.

Installation of Air Distribution Accessories (12.5 Hours)
(Module ID 04107) 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.

Construction and Sheet Metal Drawings (17.5 Hours)
 ISBN 978-0-13-663047-0
(Module ID 04202) Reviews how to read and interpret section, elevation, and detail drawings. Also covers the drawings used by a variety of crafts. Includes practice using drawings with a large drawing package.

Radial Line Development (20 Hours)
(Module ID 04203) Introduces radial line development principles used to determine layouts for sheet metal fittings. Includes practice layout and fabrication tasks that allow trainees to develop and demonstrate their skills.

Triangulation (40 Hours)
(Module ID 04304) Describes the principles of triangulation and how it can be used to measure duct run fittings. Provides a variety of tasks to practice developing, laying out, and fabricating selected duct run fittings.

Sheet Metal Duct Fabrication Standards (7.5 Hours)
(Module ID 04204) Explains how to determine the 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.

Bend Allowances (7.5 Hours)
(Module ID 04206) 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 allowance needed and the methods for calculating allowance.

Soldering (15 Hours)
(Module ID 04207) Identifies soldering tools, materials, and techniques. Also provides a wide range of soldering tasks for practice.

Air Distribution Systems (15 Hours)
(Module ID 03109) Describes the factors related to air movement and its measurement in common air distribution systems. Presents the required mechanical equipment and materials used to create air distribution systems. Introduces basic system design principles for both hot and cold climates.
**Sheet Metal Level 3**

**L3 SHEET METAL**

**Curriculum Notes**
- 145 Hours
- Updated: 2019
- NATE-Recognized Training Provider
- Downloadable instructor resources that include module tests, PowerPoints® and performance profile sheets are available at www.nccer.org/irc.

**PAPERBACK**
- Individual Modules: $24.99

**MODULES**
The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

**Commercial Airside Systems (12.5 Hours)**
(Module ID 03201) Describes the systems, equipment, and operating sequences commercial airside system configurations such as constant volume single-zone and multi-zone, VVT, VAV, and dual-duct HVAC.

**Principles of Airflow (25 Hours)**
(Module ID 04303) Explains the techniques and proper operation of equipment used for welding and brazing. Emphasizes safety and awareness of hazards involved. Trainees practice welds in a variety of positions and perform a basic braze.

**Oxyfuel Cutting (17.5 Hours)**
(Module ID 29102) Explains the safety requirements for oxyfuel cutting. Identifies oxyfuel cutting equipment and setup requirements. Explains how to light, adjust, and shut down oxyfuel equipment. Trainees will perform cutting techniques that include straight line, piercing, bevels, and gouging.

**Welding and Brazing (25 Hours)**
(Module ID 04403) Introduces the techniques and proper operation of equipment used for welding and brazing. Emphasizes safety and awareness of hazards involved. Trainees practice welds in a variety of positions and perform a basic braze.

**Architectural Sheet Metal (25 Hours)**
(Module ID 04407) Covers advancements in software and technology as it pertains to sheet metal workflow. Covers tools to enhance design, estimation, fabrication, installation, and project documentation.

**Fundamentals of Crew Leadership (22.5 Hours)**
(Module ID 46101) Covers basic leadership skills and explains different leadership styles, communication, delegating, and problem solving. Job site safety and the crew leader’s role in safety are discussed, as well as project planning, scheduling, and estimating. Includes performance tasks to assist the learning process.

**Sheet Metal Business and Technology (7.5 Hours)**
(Module ID 04407) Covers advancements in software and technology as it pertains to sheet metal workflow. Covers tools to enhance design, estimation, fabrication, installation, and project documentation.

**Blanket Insulation for Ducts (7.5 Hours)**
(Module ID 19202) Covers fiberglass blanket installation to ducts and apparatus and discusses vapor-sealed blanket insulation facings.

**Board Insulation For Ducts (20 Hours)**
ISBN 978-0-13-498775-0
(Module ID 19203) Covers fiberglass board insulation applications, such as cutting fiberglass board insulation to fit over standing seams and stiffeners, vapor-seal applications, and cutting and installing fiberglass board insulation on round or oval ducts.

To Order Call: 1-800-922-0579

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**Sheet Metal Level 4**

**L4 SHEET METAL**

**Curriculum Notes**
- 147.5 Hours
- Updated: 2019
- NATE-Recognized Training Provider
- Downloadable instructor resources that include module tests, PowerPoints® and performance profile sheets are available at www.nccer.org/irc.

**PAPERBACK**
- Individual Modules: $24.99

**MODULES**
The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

**Fume and Exhaust System Design (25 Hours)**
(Module ID 04404) Reviews the codes and specifications pertaining to fume and exhaust system design for safe workspaces. Provides instruction in selecting the appropriate materials for fume or exhaust system components and to identify the different types of hoods and applications for each.

**Board Insulation For Ducts (20 Hours)**
ISBN 978-0-13-498775-0
(Module ID 19203) Covers fiberglass board insulation applications, such as cutting fiberglass board insulation to fit over standing seams and stiffeners, vapor-seal applications, and cutting and installing fiberglass board insulation on round or oval ducts.