Mechanical Insulating

LEVEL 1

Curriculum Notes

- 167.5 Hours
- Includes 72.5 hours of Core Curriculum, which is a prerequisite for Level 1 completion and must be purchased separately.
- Downloadable instructor resources that include module tests, PowerPoints®, and performance profile sheets are available at www.nccer.org/irc.

PAPERBACK
Trainee Guide: $97.99
Individual Modules: $24.99
see module list

MODULES

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

Orientation to the Trade (5 Hours)
(Module ID 19101-18) Provides an overview of the insulation industry, including how and why insulation is used, safety factors related to insulation, and common insulation-specific tools.

Material Handling, Storage, and Distribution (2.5 Hours)
(Module ID 19104-18) Covers receiving, stacking, and storage of insulation materials, as well as material movement on the jobsite.

Characteristics of Pipe (5 Hours)
ISBN 978-0-13-448318-4
(Module ID 19105-18) Provides an overview of different pipe types and their uses, pipe sizing methodology, and the relationship between pipe sizes and insulation sizes.

Flexible Foam Insulation (25 Hours)
(Module ID 19201) Covers proper tool use and procedures for installing flexible foam insulation, including how to cut and install flexible foam insulation on pipe fittings, valves, flanges, equipment, and air ducts.

Air Duct Systems (7.5 Hours)
(Module ID 19202) Covers the identification of various duct systems and their associated components.

Blanket Insulation for Ducts (7.5 Hours)
(Module ID 19204) Covers fiberglass blanket installation to ducts and apparatus and discusses vapor-sealed blanket insulation facings.

Board Insulation for Ducts (20 Hours)
ISBN 978-0-13-489775-0
(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.

Cements and Fabric Finishes (10 Hours)
(Module ID 19208) Covers the proper use of finishing tools, cleanup and protection procedures, and the limitations of cements, fabric finishes, and mastics.

Insulation Adhesives (5 Hours)
(Module ID 19304) Covers the identification, application, and use of adhesives.

Chilled and Hot Water Heating Systems (5 Hours)
(Module ID 19210-18) Covers chilled and hot water heating and dual temperature systems, including the types of pipe and equipment common to each type of system. Explains the types of insulation required by each type of system.

Installing Fiberglass Pipe Insulation (30 Hours)
(Module ID 19106-18) Describes the characteristics of fiberglass pipe insulation and the characteristics of ASJ jacketing.

Insulating Pipe Fittings, Valves, and Flanges (40 Hours)
(Module ID 19107-18) Explains insulation requirements for fittings, valves, and flanges. Provides tips for professional and economical installation.

LEVEL 2

Curriculum Notes

- 170 Hours
- Updated in 2018.

PAPERBACK
Trainee Guide: $99.99
Individual Modules: $24.99
see module list

MODULES

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

Construction Drawings and Specifications (12.5 Hours)
(Module ID 19309) Describes how to determine the insulation requirements of a project by interpreting construction drawings.

Trade Math and Layout (7.5 Hours)
ISBN 978-0-13-498780-4
(Module ID 19212) Reviews some basic arithmetic and geometric concepts applicable to the mechanical insulating craft. Building on these basic skills, trainees then learn drafting and layout methods that they will frequently use throughout their careers.

Heat Transfer (2.5 Hours)
(Module ID 19303) Describes methods of heat transfer and moisture migration and discusses the application of various types of insulation to slow or prevent these processes.

Flexible Foam Insulation (25 Hours)
(Module ID 19201) Covers proper tool use and procedures for installing flexible foam insulation, including how to cut and install flexible foam insulation on pipe fittings, valves, flanges, equipment, and air ducts.

Vapor Retarders and Insulation Coatings (10 Hours)
(Module ID 19211) Addresses the need to avoid the intrusion of water vapor into porous insulation and vapor retardant materials available to mechanical insulators. Trainees will also learn how to apply vapor-retardant mastics and membranes for common insulating scenarios.

Steam and Process Water Systems (10 Hours)
(Module ID 19305) Covers the identification of steam and condensate piping and describes steam and process water systems and their components.

Calcium Silicate/Expanded Perlite Pipe Insulation (20 Hours)
ISBN 978-0-13-498762-0
(Module ID 19204) Discusses the safe handling and storage of calcium silicate pipe insulation, how to make accurate cuts, and how to install single- and double-layers of calcium silicate pipe insulation.

Rigid Foam and Cellular Glass Insulation (12.5 Hours)
(Module ID 19206) Covers the proper use of tools; handling and storage of rigid foam insulation; measuring, cutting, installing, and sealing rigid foam plastic and cellular glass insulation; cryogenic installation; expansion joints; contraction joints; and vapor stops.

Continued on following page
Mechanical Insulating Level 2 (continued)

**Industrial Boiler Systems** (7.5 Hours)
(Module ID 19207) Describes boilers and related equipment, and their insulation requirements.

**Mineral Wool Insulation** (12.5 Hours)
(Module ID 19205) Describes how to measure, cut, and score mineral wool insulation. Discusses attachments used on mineral wool, installation methods, sealing requirements, and how to use pin welding equipment.

### L3 MECHANICAL INSULATING

**Curriculum Notes**
- 152.5 Hours
- Updated in 2018.

**PAPERBACK**

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<th>MODULES</th>
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<tr>
<td>Board and Block Insulation (17.5 Hours)</td>
<td>ISBN 978-0-13-498753-8 (Module ID 19207)</td>
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<tr>
<td>Sheet-Metal Laying (15 Hours)</td>
<td>ISBN 978-0-13-498752-1 (Module ID 19312)</td>
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**Jacketing Systems** (12.5 Hours)
ISBN 978-0-13-498749-1 (Module ID 19313) Describes the purposes and the types of insulation jacketing available for mechanical systems. This module also explains how to work with various kinds of organic, polymeric, and other types of jacket not made from rigid sheet metal.

**Jacketing Fabrication – Pipe and Fittings** (42.5 Hours)
ISBN 978-0-13-498747-7 (Module ID 19310) Covers the identification and applications of pipes and pipe fittings and describes types of pipe and fitting jacketing, along with layout installation procedures and securements.

**Jacketing Fabrication – Vessels and Equipment** (25 Hours)
ISBN 978-0-13-498743-9 (Module ID 19311) Covers the identification of vessel and equipment jacketing, along with layout, fabrication, installation procedures, and securements.

**Removable and Reusable Flexible Insulation Covers** (12.5 Hours)

**Specialized Insulation Systems** (5 Hours)
ISBN 978-0-13-498739-2 (Module ID 19308) Describes special-application insulation systems, including low-temperature and prefabricated panels; refractory insulation; soft pads and pre-shaped removable covers; preinsulated systems; spray, foam, and pour-in-place insulation; fire stops; noise and sound control systems; and cryogenic applications.

**Fundamentals of Crew Leadership** (22.5 Hours)
ISBN 978-0-13-487188-2 (Module ID 46101) The course covers basic leadership skills and explains different leadership styles, communication, delegating, and problem solving. Jobsite safety and the crew leader’s role in safety are discussed, as well as project planning, scheduling, and estimating.