

# ATIN-2240: REMOVABLE INSULATION

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## Cuyahoga Community College

**Viewing: ATIN-2240 : Removable Insulation**

**Board of Trustees:**

March 2025

**Academic Term:**

Spring 2025

**Subject Code**

ATIN - Applied Industrial Technology - Insulators

**Course Number:**

2240

**Title:**

Removable Insulation

**Catalog Description:**

Develop the skills to choose from design templates and fabricate removable insulation. Covers how to determine the need for removable pads, choose design of introductory pads, production of removable insulation boxes for various applications, and use of an industrial sewing machine to fabricate removable pads.

**Credit Hour(s):**

3

**Lecture Hour(s):**

3

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to Heat and Frost Insulator's apprenticeship program.

## Outcomes

**Course Outcome(s):**

Understand the need for removable pads.

**Objective(s):**

1. Determine instances of when to utilize pads.
2. Utilize measurement skills to obtain accurate insulation projections.
3. Categorize the different materials used for pad making.
4. Calculate material estimation.
5. Identify the various removable insulation systems.

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**Course Outcome(s):**

Design introductory pads.

**Objective(s):**

1. Define key terms.
  2. Determine tools needed.
  3. Execute beginner pad layout.
  4. Experiment with various layout techniques.
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**Course Outcome(s):**

Develop skills to design and fabricate advanced pads.

**Objective(s):**

1. Identify areas in which complex pads are necessary.
2. Measure and fabricate complex pad systems.
3. Examine instances of multi-pad systems.

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**Course Outcome(s):**

Produce removable insulation boxes for various applications.

**Objective(s):**

1. Identify and select the appropriate materials for specified application.
2. Measure and cut and fabricate insulation to fit around the apparatus (ie. Valves, flange, etc.)
3. Measure, fabricate and apply removable insulation boxes in accordance with job specifications.
4. Measure, fabricate and apply removable pads in accordance with job specifications.
5. Install removable insulation box.

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**Course Outcome(s):**

Utilize an industrial sewing machine to fabricate removable pads.

**Objective(s):**

1. Identify the commonalities and differences of various sewing manufacturers equipment.
2. Explain the standard maintenance requirements for industrial sewing machines.
3. Discuss safe operation procedures for industrial sewing machines.
4. Demonstrate proper use of an industrial sewing machine.

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**Methods of Evaluation:**

1. Quizzes
2. Tests
3. Final exam
4. Tape measure skills practice
5. Caliper and divider skills practice
6. Estimation exercises
7. Homework worksheets
8. Geometric construction projects

**Course Content Outline:**

1. Establishing need
  - a. Maintenance
  - b. Environmental considerations
  - c. Replacement items
2. Materials
  - a. Canvass
  - b. Teflon
  - c. Silicone
  - d. Fiberglass
  - e. Ceramic fiber
  - f. Steel mesh
3. Tools
  - a. Squares\ straight edges
  - b. Measuring devices
  - c. Fabric shears

- d. Lacing hooks
- e. Cloggers
- f. Hog ringers
  - i. Handheld
  - ii. Pneumatic
- g. Snakes
- h. Sewing machine and equipment
  - i. Care and maintenance
  - ii. Safe operation
- 4. Introductory layouts
  - a. Snakes
  - b. Flanges
  - c. Valves
- 5. Advanced pads
  - a. Tees
  - b. Laterals
  - c. Complex valves
  - d. Pump boxes
  - e. Full lines
  - f. Turbines
  - g. Boilers
  - h. Single pads
    - i. Two-piece pads
    - j. Multi-pad systems
- 6. Fasteners
  - a. Teflon thread
  - b. Starch thread
  - c. Steel thread
  - d. Staples
  - e. Hog rings
- 7. Removable Insulation boxes
  - a. Measurement and layout of the equipment to be insulated
  - b. Types of materials
  - c. Fabrication
  - d. Installation

## Resources

*Removable Insulation- Pads and Blankets.* . International Association of Heat and Frost Insulators and Asbestos Workers, 2011.

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*Dan Smith Student Pad Manual.* International Association of Heat and Frost Insulators and Asbestos Workers, 2011.

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*Metal & Rubber Layout Book.* International Association of Heat and Frost Insulators and Asbestos Workers, 2018.

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## Resources Other

[www.jatctraining.com](http://www.jatctraining.com) 2024.

Insulators Union - YouTube 2024.

Juki America | Home Sewing, Serging, and Quilting Machines ([jukihome.com](http://jukihome.com)) 2024

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