

ATIN-1020: FUNDAMENTAL INSULATION I - INSULATION THEORY

Cuyahoga Community College

Viewing: ATIN-1020 : Fundamental Insulation I - Insulation Theory

Board of Trustees:

October 2024

Academic Term:

Spring 2025

Subject Code

ATIN - Applied Industrial Technology - Insulators

Course Number:

1020

Title:

Fundamental Insulation I - Insulation Theory

Catalog Description:

Identify, observe, and predict the main forms of heat transfer. Use these skills and understanding to recognize how and when mechanical insulation is required. Also, covers Firestop requirements and certification.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

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

Outcomes

Course Outcome(s):

Analyze the causes and effects of heat transfer.

Objective(s):

1. Distinguish the differences between each of the three main types of heat transfer.
2. Observe and identify how each type originates and affects various types of matter.
3. Predict the outcome of heat transfer in relation to temperature.

Course Outcome(s):

Explain the need for insulation for energy conservation.

Objective(s):

1. Identify the main reasons for insulation.
2. Categorize a glossary of industry terms relating to thermodynamics.
3. Define and identify glossary terms related to the insulation industry.

Course Outcome(s):

Analyze and choose appropriate Firestop systems for specified jobs.

Objective(s):

1. Recognize the need for firestop systems.
2. Identify various firestop materials.
3. Analyze the construction of the various firestop systems.
4. Determine how to choose the appropriate firestop system.
5. Obtain Firestop Certification.

Methods of Evaluation:

1. Quizzes from International
2. Tests from International
3. Final exam from International
4. Homework worksheets
5. Final Exam Specified Technologies Inc (STI)

Course Content Outline:

1. Forms of Heat Transfer and Respective Sources
 - a. Conduction
 - b. Convection
 - c. Radiation
2. Glossary of terms
 - a. Dew Point
 - b. Humidity
 - c. Hot
 - d. Cold
 - e. Condensation
3. Functions of Insulation
 - a. Prevent heat transfer
 - b. Conserve energy
 - c. Slow freezing
 - d. Protect personnel from burns
 - e. Control fire hazards
4. Insulation Materials
 - a. Configurations
 - b. Composition
 - c. Characteristics
5. General Insulating Methods Theory
 - a. Moderate-Temperature Piping
 - b. Hot Piping
 - c. Cold and Low-Temperature Piping
6. Firestop
 - a. History of Firestop
 - b. Materials
 - c. UL Systems
 - i. System construction
 - ii. System selection

Resources

- International Association of Heat and Frost Insulators and Asbestos Workers. *Fundamental Insulation I Piping Manual - Version*
2. International Association of Heat and Frost Insulators and Asbestos Workers, 2014.

Resources Other

1. Firestop University-FIT I- Specified Technology Inc, 2024
2. www.jatctraining.com (<http://www.jatctraining.com>) 2024.
3. www.api.stifirestop.com (<http://www.api.stifirestop.com>) 2024.

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