

HVA 101 - INTRODUCTION TO HVAC/R

Course Description

This course will introduce students to the HVAC/R field by exploring basic heating, ventilation, and air conditioning concepts. Concepts of concentration include an introduction to HVAC/R, trade mathematics, basic electricity, introduction to heating, introduction to cooling, air distribution systems, basic copper and plastic piping practices, soldering and brazing, and basic carbon steel piping practices. Completion of this course will result in a Level 1 National Center for Construction Education Research Credential. Group 2 course.

Credit Hours

3

Contact Hours

4

Lecture Hours

2

Lab Hours

2

Required Prerequisites

CMT 100, may be taken concurrently

Recommended Prerequisites or Skills Competencies

Placement into ENG 111 and MTH 111

Course Learning Outcomes

Knowledge:

- Understand the basic principles of heating, ventilation, air conditioning, and refrigeration.
- Explain basic electrical theory.
- Explain the fundamental concepts of heating and combustion.
- Explain the fundamental concepts of the refrigeration cycle.
- Recognize different types of plastic, copper, and steel piping and explain how they are joined.

Application:

- Apply the principles that guide HVAC/R installation and service techniques to a variety of scenarios.
- Apply the electrical measuring instruments used in HVAC/R work to a variety of scenarios.
- Demonstrate the safe process of soldering/brazing copper tubing.

Integration:

- Assemble a circuit based on a diagram.
- Identify and describe the function of the primary components in an induced-draft furnace or condensing furnace.
- Identify the compressor, condenser, evaporator, metering device, and accessories in a cooling system.
- Cut and bend copper tubing.
- Braze copper tubing to either steel or brass components.

- Cut, ream, and thread steel pipe.
- Join threaded pipe or pipe nipples using various fittings.

Human Dimension:

- Feel confident about your ability to successfully interact with a client.
- Collaborate with a multidisciplinary team to provide the best service for the end user.

Caring - Civic Learning:

- Commit to the safety and wellbeing of everyone on the job site and the end user.
- Value the importance of HVAC/R and how it impacts everyday life.

Learning How to Learn:

- Recognize when more information is needed and seek help and resources.
- Identify personal learning preferences with HVAC/R course content.