

Course Description**ACR0000 | Introduction to HVAC/R | 8.33 credits**

This course offers a comprehensive overview of the heating, air conditioning, and refrigeration (HVAC/R) industry, covering essential aspects from health, safety, and environmental management systems, which are crucial for organizational performance and regulatory compliance, to employability and entrepreneurial skills necessary for career advancement. Participants will learn to identify, use, and maintain industry-specific tools and accessories, alongside developing fundamental mathematics skills. The curriculum explores the properties of matter, heat behavior, and the historical and conceptual underpinnings of HVAC/R. It also includes an analysis of fluids, pressures, refrigerants, and relevant codes, alongside evaluations of system components and accessories. Practical skills in fabricating and servicing piping, tubing, and fittings, as well as operating mechanical refrigeration servicing and testing equipment, are key components of the program.

Course Competencies

Competency 1: The student will understand HVAC/R fundamentals and demonstrate a comprehensive understanding of the principles and concepts underlying the HVAC/R industry, including the properties of matter, heat behavior, and the historical context of HVAC/R systems by:

1. Exploring the properties of matter and heat behavior to understand their impact on HVAC/R systems and applications
2. Analyzing historical developments in the HVAC/R industry to contextualize current technologies and practices
3. Evaluating the fundamental concepts of HVAC/R, including the behavior of fluids and pressures, to apply these principles in practical scenarios

Competency 2: The student will develop proficiency in tools and system components and the skills to identify, use, and maintain industry-specific tools and components essential for HVAC/R installation, maintenance, and repair by:

1. Practicing identifying and properly using industry-specific tools and accessories to ensure safe and effective HVAC/R operations
2. Maintaining and servicing system components, including piping, tubing, and fittings, to demonstrate practical application of HVAC/R skills
3. Fabricating and assembling HVAC/R systems using appropriate tools and techniques to ensure compliance with industry standards

Competency 3: Students will understand and apply health, safety, and environmental management and principles relevant to the HVAC/R industry to ensure regulatory compliance and organizational performance by:

1. Implementing health and safety protocols in HVAC/R practices to promote workplace safety and environmental stewardship
2. Evaluating regulatory codes and standards related to HVAC/R systems to ensure compliance and best practices in environmental management
3. Analyzing risk factors in HVAC/R operations to develop effective strategies for risk mitigation and environmental impact reduction

Learning Outcomes:

1. Communicate effectively using listening, speaking, reading, and writing skills
2. Use quantitative analytical skills to evaluate and process numerical data
3. Solve problems using critical and creative thinking and scientific reasoning