South Central College

HVAC 2100 Refrigeration Theory

Course Outcome Summary

Course Information

Description This course introduces the students to the refrigeration system, how it works, and the relationship between pressure & temperatures. We will discuss the reasons for EPA testing, refrigeration terminology, troubleshooting, and the proper handling of refrigerants.

Total Credits 2

Total Hours 48

Types of Instruction

Instruction Type	Credits/Hours
Lecture	
Lab	

Pre/Corequisites

None

Institutional Core Competencies

Civic Engagement and Social Responsibility - Students will be able to demonstrate the ability to engage in the social responsibilities expected of a community member.

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Cultural Competence - Students will be able to demonstrate an attitude of personal curiosity, a rising knowledge of cultures, and an evolving range of skills for living and working among others with other worldviews and ways of life.

Course Competencies

1. Explore safety equipment and techniques.

Learning Objectives

Discuss the hazards of refrigerants.

Recognize the danger of oxygen depravation and how it can happen.
Compute fill capacity on refrigerant recovery vessels.
Recognize the purpose of a regulator on a nitrogen tank.

2. Compare the three physical states of mater.

Learning Objectives
Analyze the properties of a vapor.
Analyze the properties of a liquid.
Analyze the properties of a solid.

3. Explore the theory of thermodynamics.

Learning Objectives
Discuss the direction of heat travel.
Interpolate british thermal unit (BTU).
Define superheat.
Define subcooling.
Study the movement of heat by convection.
Study the movement of heat by conduction.
Study the movement of heat by radiation.

4. Investigate types of heat.

Learning Objectives
Clarify sensable Heat.
Differentiate latent Heat.
List types of specific Heat.

5. Characterize the pressure and temperature relationship.

Learning Objectives
Convert temperature to pressure using charts for prescribed refrigerants.
Convert pressure to temperature using charts for prescribed refrigerants.
Clarify how pressure affects boiling temperature.
Calculate superheat.
Calculate subcooling.

6. Identify the four part refrigeration system.

Learning Objectives
Draw a four part system.
List the condition of the refrigerant in the four part system.
Describe the function of the compressor.
Describe the function of the metering device.
Describe the function of the evaporator.
Describe the function of the condenser.

7. Summerize the purpose of system evacuation.

Learning Objectives
Describe the proper use of a vacuum pump.
Detail the need for a dry system.
Indicate the required level of vacuum to insure a dry system.
Review types of vacuum gages.

8. Examine EPA-608 refrigerant certification.

Learning Objectives
Study the ESCO 608 study guide.
Review EPA-608 laws.
Explain the environmental impact of the hole in the ozone.
Complete the ESCO EPA-608 exam.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.