

# RANKEN

TECHNICAL COLLEGE

## COURSE INFORMATION

Course Number: HVA 1011

Course Name: Fundamentals of Heat Transfer and Domestic Applications Theory

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## CREDIT-BY-ASSESSMENT (CBA) COMPETENCY LIST

- List the four positions in which two-way service valves can be placed.
- Give the reasons for the valve being placed in its four positions.
- Explain how to place a two-way service valve into its four positions.
- Distinguish between piercing valves and Schrader core valves.
- List and describe the uses for the two classifications of brazing alloys used in the HVAC trade.
- State the four characteristics of a system which uses a capillary tube metering device.
- Explain how to set the most common design of commercial temperature controls.
- List and describe the three body styles of compressors.
- Explain what an inefficient is.
- State what an evacuation procedure is and why it is performed.
- Tell how vacuum pumps are sized.
- Describe what a flare connection is.
- Define heat.
- Explain how heat travels.
- Tell how heat is measured.
- Describe the two types of heat.
- Practice btu problems.
- Explain how refrigeration equipment is sized.
- List and define the three methods of heat transfer.
- List the methods for finding leaks.
- Define terms related to the amount of refrigerant in a system.
- List the five halogen elements.
- List and describe the three physical states in which a substance can be found.
- List and describe the most commonly used pressure scales.
- List and explain pressure scale conversions.
- Practice pressure conversions.
- State and explain laws which pertain to pressure.
- Define the term "FLOOD Back."
- Name the five types of refrigeration compressors.
- Define the term "Positive Displacement."
- List the type of compressor which is considered single acting.
- Explain how a reciprocating compressor works.

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- Explain how a scroll compressor works.
- List and explain the three steps of compression.
- List and define the three “Rs” of refrigerant removal.
- Show how chlorine molecules destroy ozone molecules.
- Define the term “De minimis.”
- List and explain the two methods for lubricating compressors.
- List and describe the three types of refrigeration gauges.
- Describe how to use a gauge manifold.
- Describe the common service procedures that involve the use of a gauge manifold.
- Give the advantages of a scroll compressor compared to a reciprocating compressor.
- Work compressor ratio problems.
- Define important terms which are relevant to soldering and brazing.
- List and go over the two most commonly used temperature scales.
- Work temperature scale conversion problems.
- Introduce the temperature-pressure chart.
- Explain temperature-pressure relationship as it pertains to a change of state.
- Explain temperature-pressure relationship as it pertains to a condition of equilibrium.
- Work problems pertaining to temperature-pressure relationship.
- Explain what a basic refrigeration system consists of.
- Name the four major components of a mechanical refrigeration system and tell what they do.
- Name the three lines which connect the major components.
- Tell the physical condition of the refrigerant in each refrigerant line.
- Explain what superheat is.
- Work superheat problems.
- List and explain the forces effecting the operation of a thermostatic expansion valve.
- Explain how the power bulb produces the opening force of a thermostatic expansion valve.
- List the four most common types of threads used in the HVAC trade and give their uses.
- Add feet and inch measurements together.
- Subtract feet and inch measurements.
- Define the term “area.”
- Define the term “volume.”
- Explain the differences between hard drawn and annealed tubing.
- Tell how refrigerant tubing is sized.