HVAC A105: AIR CONDITIONING AND REFRIGERATION CONTROLS

Item	Value
Curriculum Committee Approval Date	10/30/2024
Top Code	094600 - Environmental Control Technology
Units	3 Total Units
Hours	72 Total Hours (Lecture Hours 45; Lab Hours 27)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

Controls used in the Heating, Air Conditioning and Refrigeration that include temperature, pressure, overload and safety controls. PREREQUISITE: HVAC A100 and HVAC A101. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Identify appropriate control applications for specific HVACR systems.
2. Diagnose and identify electronic control systems failures.
3. Perform preventive maintenance and repair on HVACR control systems.

Course Objectives

- 1. Describe controls and control circuits
- 2. Identify appropriate control applications for specific HVACR systems
- 3. Diagnose and identify control systems failures.
- 4. Describe trouble shooting and diagnostic procedures.
- 5. Describe pressure and temperature controls including thermal overloads.
- 6. Describe relay controls and circuits.

Lecture Content

Control Theory: Control Equipment Modes of Automatic Control Electric Control Circuits Pressure and temperature controls Thermal overloads Relays Control Combinations Trouble shooting/diagnostics Perform preventive maintenance and repair on HVACR control systems. Understand operating controls. Understand safety controls.

Lab Content

Control Theory: Control Equipment Modes of Automatic Control Electric Control Circuits Pressure and temperature controls Thermal overloads Relays Control Combinations Trouble shooting/diagnostics Perform preventive maintenance and repair on HVACR control systems. Understand operating controls. Understand safety controls.

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

Book, videos coupled with guest speakers and hands on demonstrations by instructor to show proper use of diagnostic tools to troubleshoot a system.

Reading Assignments

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Writing Assignments

Written essays on particular service situations; hands on demonstrations showing an understanding of the use of electrical meters and pressure gauges and other tools of the trade. 1-3 hours per week.

Out-of-class Assignments

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Demonstration of Critical Thinking

Testing using multiple choice, true/false, fill in the blanks and essay; hands on with meters and gauges and other diagnostic tools of the trade to make a decision as to the best procedure to make necessary repairs.

Required Writing, Problem Solving, Skills Demonstration

Written essays on particular service situations; hands on demonstrations showing an understanding of the use of electrical meters and pressure gauges and other tools of the trade.

Eligible Disciplines

Air conditioning, refrigeration, heating (solar energy technician): Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Russell E. Smith. Electricity for Refrigeration, Heating And Air Conditioning, 7th ed. Thompson/Delmar Learning/Cenage, 0 Rationale: latest