# HVAC A102: REFRIGERATION SERVICE

| 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

Operation, Maintenance, Troubleshooting and repair of Commercial refrigeration systems. Theory, operation, maintenance and trouble-shooting of absorption system. PREREQUISITE: HVAC A100 and HVAC A101. Transfer Credit: CSU.

## Course Level Student Learning Outcome(s)

1. Interpret gauge readings to identify component and system failures.
2. Recover, repair, evacuate, and recharge refrigeration systems to return to efficient operating standards while adhering to EPA guidelines.

## Course Objectives

- 1. Describe sequence of operation for refrigeration systems
- 2. Interpret gauge readings for diagnosis and repair
- 3. Repair, evacuate, and recharge refrigeration systems to return to efficient operating standards.
- 4. Recover refrigerant.
- 5. Describe EPA standards for refrigerant handling.
- 6. Use tools of the trade for repair of refrigeration systems.
- 7. Submit application and take test for EPA certification.
- 8. Describe basic fundamentals of service and maintenance.
- 9. Install and service refrigeration components.

## Lecture Content

Refrigeration System Components Compressors Condensers Evaporators Refrigerant Control Devices Electric Control Devices Motors, Starters, Protectors Accessories System Design Applications Refrigerant Piping Capacity Control Electric Circuits Installation and Service Installation Servicing Fundamentals Maintenance

## Lab Content

Refrigeration System Components Compressors Condensers Evaporators Refrigerant Control Devices Electric Control Devices Motors, Starters, Protectors Accessories System Design Applications Refrigerant Piping Capacity Control Electric Circuits Installation and Service Installation Servicing Fundamentals Maintenance

## Method(s) of Instruction

- Lecture (02)
- Lab (04)

## Instructional Techniques

Lecture and hands on demonstrations for recovering refrigerants, evacuation and recharge refrigeration systems after repair to return to efficient operating standards

## Reading Assignments

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## Writing Assignments

Written description of methods for diagnosis of mechanical and electrical failures and sequence of repair proceedings. Use of tools of the trade in a hands on demonstration for implementing diagnosis and completing repair. 1-3 hours per week.

## Out-of-class Assignments

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## Demonstration of Critical Thinking

Written tests including multiple choice, true/false, fill in, and hands on demonstrations using tools of the trade.

## Required Writing, Problem Solving, Skills Demonstration

Written description of methods for diagnosis of mechanical and electrical failures and sequence of repair proceedings. Use of tools of the trade in a hands on demonstration for implementing diagnosis and completing repair.

## 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 Dick Wirz. Commercial Refrigeration for A/C Tech, 3rd ed. New York: Thompson/Delmar , 2022 Rationale: latest