

## **COURSE SYLLABUS**

<b>LAST REVIEW</b>	Fall 2022
<b>COURSE TITLE</b>	Refrigeration System Components 2
<b>COURSE NUMBER</b>	HVAC 0104
<b>DIVISION</b>	Career and Technical Education
<b>DEPARTMENT</b>	HVAC
<b>CIP CODE</b>	47.0201
<b>CREDIT HOURS</b>	2
<b>CONTACT HOURS/WEEK</b>	Class: 0.5                      Lab: 3
<b>PREREQUISITES</b>	None
<b>COURSE PLACEMENT</b>	None

### **COURSE DESCRIPTION**

This course is an introduction to refrigeration and system components. This course will cover refrigerants, refrigeration process, pressure and temperature relationship, refrigeration components (evaporator, compressor, condenser, and refrigerant metering devices), pumping characteristics, and potting the refrigerant cycle.

### **PROGRAM ALIGNMENT**

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

[https://kansasregents.org/workforce\\_development/program-alignment](https://kansasregents.org/workforce_development/program-alignment)

### **PROGRAM LEARNING OUTCOMES**

1. The student will be able to demonstrate the ability to perform HVAC procedures in a safe manner
2. The student will be able to classify the different needs of equipment and summarize a solution.
3. The student will be able to exhibit a high level of professionalism including appropriate dress, attendance, communication skills and other soft skills necessary.

### **TEXTBOOKS**

<http://kckccbookstore.com/>

## **METHODS OF INSTRUCTION**

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

## **COURSE OUTLINE**

- I. Types of Evaporators
  - A. Bare-pipe evaporator
  - B. Forced-draft evaporator
  - C. Stamped evaporator
  - D. Finned evaporator
  
- II. Compressors
  - A. Function of the Compressor
  - B. Types of Compressors
    1. Reciprocating Compressors
    2. Fully Welded Hermetic Compressors
    3. Serviceable Hermetic Compressors
    4. Open Drive Compressors
    5. Belt Drive Compressors
    6. Direct Drive Compressors
    7. The Rotary Screw Compressor
  - C. Reciprocating Compressor Components
    1. The Crankshaft
    2. Connecting Rods
    3. The Piston
    4. Refrigerant Cylinder Valves
    5. The Valve Plate
    6. The Head of Compressor

## **COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon successful completion of this course, the student will:

- A. Identify different types of evaporators.
  - 1. Demonstrate the Bare-pipe evaporator.
  - 2. Demonstrate a forced-draft evaporator.
  - 3. Demonstrate a stamped evaporator.
  - 4. Demonstrate a finned evaporator.
  
- B. Demonstrate the function of a compressor system.
  - 5. Demonstrate compress refrigerant gases.
  - 6. Demonstrate how to create a high pressure.
  - 7. Demonstrate how to maintain refrigerant flow.
  
- C. Demonstrate an understanding of a reciprocating and rotary compressor.
  - 8. Demonstrate that a reciprocating compressor has pistons, rods, valves, crankshaft, and a valve plate. Used mostly in residential applications.
  - 9. Demonstrate that rotary compressor has rotors, vanes, valves, crankshaft, and screws. Used mostly in commercial applications.
  
- D. Demonstrate the different types of compressors.
  - 10. Demonstrate reciprocating Compressors.
  - 11. Demonstrate a fully Welded Hermetic Compressors.
  - 12. Demonstrate serviceable Hermetic Compressors.
  - 13. Demonstrate open Drive Compressors.
  - 14. Demonstrate belt Drive Compressors.
  - 15. Demonstrate direct Drive Compressors
  - 16. Demonstrate Rotary Screw Compressor.

### **ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES**

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

### **COLLEGE POLICIES AND PROCEDURES**

*Student Handbook*

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

*College Catalog*

<https://www.kckcc.edu/academics/catalog/index.html>

*College Policies and Statements*

<https://www.kckcc.edu/about/policies-statements/index.html>

*Accessibility and Accommodations*

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.