

COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	Refrigeration System Components 1
COURSE NUMBER	HVAC 0103
DIVISION	Career and Technical Education
DEPARTMENT	HVAC
CIP CODE	47.0201
CREDIT HOURS	2
CONTACT HOURS/WEEK	Class: 0.5 Lab: 3
PREREQUISITES	HVAC 0100
COURSE PLACEMENT	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 plotting 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

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. Evaporators and the Refrigeration System
 - A. Refrigeration
 - B. Temperature Ranges of Refrigeration
 - 1. High-temperature applications
 - 2. Medium-temperature applications
 - 3. Low-temperature applications
 - C. The Evaporator
- II. Special Refrigeration System Components
 - A. The Four Basic Components
 - 1. Compressor
 - 2. Condenser
 - 3. Evaporator
 - 4. Expansion device

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

- A. Define high, medium, and low temperature refrigeration
 - 1. Define and work with high refrigeration (temperatures are -40 F or below)
 - 2. Define and work with medium refrigeration temperatures to 0 F and low temperature refrigeration (temperatures are 40 F and above.)
 - 3. Define and work with low temperature refrigeration (temperatures are 40 F and above.)
- B. Identify different types of evaporators
 - 4. Describe Bare pipe evaporator and use (commercial)
 - 5. Describe Forced draft evaporator and use (residential)
 - 6. Describe Stamped evaporators and use (residential refrigeration)
 - 7. Describe finned evaporators and use (residential cooling)
- C. Demonstrate the purpose of a refrigeration condenser
 - 8. Verbalize understanding safety in pressurized systems.
 - 9. Verbalize understanding safety in electrically powered systems.

10. Safely clean and service the condensing coil
11. Check the charge of the condenser coil.

D. Demonstrate an understanding of expansion devices

12. Demonstrate proper safe use of metering devices
13. Demonstrate proficiency in metering refrigerant charge.
14. Demonstrate the ability to adjust the operation of an expansion device
15. Select the proper expansion device to be used in a low-temp system
16. Inspect the expansion valve sensing bulb and be ensure that it is fastened properly to the line.

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>.