



Course Outline

2026-2027 Catalog

HVAC 22 - Intermediate HVACR Components

Catalog Description

Transfer Status: CSU

Prerequisite: ITEC 55, HVAC 11, HVAC 12, HVAC 13

Corequisite: HVAC 21, HVAC 23

Unit(s): 4.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Lab: 102.00 Contact hours/0.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Total: 136.00 Contact hours/68.00 Out of class hours/204.00 Total hours/4.00 Unit(s)

Course Description: This course is designed to provide pre-employment training in Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) systems for industrial trades. Emphasis will be placed on developing safety skills, tool identification, basic rigging and material handling skills, with soft skills training. These areas of instruction will be applied in several hands on performance lab exercises. This course is part of the National Center For Construction Education and Research (NCCER) core curriculum qualification.

Objectives

Upon successful completion of this course, the student should be able to:

1. Practice safety skills that are required on job-sites.
2. Identify and describe the common types of sheet metal.
3. Describe the methods used to suspend and support sheet metal duct.
4. Describe the standards and application considerations related to fiberglass duct.
5. Explain how transformers operate and identify various types of transformers used in HVAC systems.
6. Describe the basic commercial airside systems and their operating characteristics.

Course Content

Topic Titles / Suggested Time Topic

Lecture

<u>Topics</u>	<u>Lec Hrs</u>
Introduction and Safety	1.50
Basic Duct Work	4.00
Introduction to Piping Systems	8.00
Introduction to Methods of Connecting Piping Systems	6.50
Field Electrical Components	6.00
Advanced HVACR Equipment	8.00
Total Hours:	34.00

Lab

<u>Topics</u>	<u>Lab Hrs</u>
Introduction and Safety	1.50
Basic Duct Work	18.00
Introduction to Piping Systems	24.00
Introduction to Methods of Connecting Piping Systems	20.50
Field Electrical Components	18.00
Advanced HVACR Equipment	20.00
Total Hours:	102.00

Methods of Instruction

- A. Demonstrations
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Laboratory Experiments
- D. Lecture
- E. Multimedia Presentations

Methods of Evaluation

- A. Exams/Tests
- B. Quizzes
- C. Homework
- D. Lab Projects

Examples of Assignments

Reading Assignments

1. Read module 11 and be prepared to discuss in class.
2. Read assigned trade journal article and be prepared to discuss in class.

Writing Assignments

1. Write an order of operations for the proper method of connecting a metal piping system.
2. Write a two-page essay, explaining how the trade journal article can be implemented in workplace safety and how it relates to the class.

Out-of-Class Assignments

1. Research online the proper process for selecting the proper size panel and circuit breakers for the specified HVAC unit using manufactures publications and be prepared to discuss in class
2. Research OSHA publications for the use and safety of power tools properly and write a one-page essay.

Recommended Materials of Instruction

National Center for Construction Education and Research (NCCER). (2018). Heating, Ventilating, and Air Conditioning - Level 2. *Pearson Education INC.*

Other Learning Materials

All tools listed in the HVACR Program Guide.

Minimum Qualifications

Air Cond,Refrig,Heating
Industrial Technology

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Date: 02/25/2019