COURSE SYLLABUS

LAST REVIEW   Fall 2022

COURSE TITLE   Electrical Theory (Electricity & Components)

COURSE NUMBER   HVAC 0106

DIVISION   Career and Technical Education

DEPARTMENT   HVAC

CIP CODE   47.0201

CREDIT HOURS   2

CONTACT HOURS/WEEK Class: 0.5   Lab: 3

PREREQUISITES   None

COURSE DESCRIPTION

This course will cover electrical circuits, Ohm's Law, series and parallel circuits and electrical power. The course will also cover automatic controls and components, troubleshooting basic controls, and electronic and programmable controls.

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.   Ohm's Law
II.   Characteristics of Series Circuits.
III.   Characteristics of Parallel Circuits
IV.   Electronic and Programmable Controls
      A.   Electronic Controls
      B.   Electronic Thermostats
      C.   Troubleshooting Electronic Controls

COURSE LEARNING OUTCOMES AND COMPETENCIES
Upon successful completion of this course, the student will:

A. Describe Ohm's Law
   1. Demonstrate voltage equals amperage x resistance.
   2. Demonstrate amperage equals voltage divided by resistance.
   3. Demonstrate resistance equals voltage divided by amperage.

B. Demonstrate how a capacitor and transformer works.
   4. Describe how a capacitor takes a voltage through a series of copper wire loops to set-up the out-put voltage.
   5. Describe how a transformer takes voltage through a series of copper wire loops to step-down the out-put voltage.

C. Demonstrate an understanding of electronic controls applications.
   6. Explain that electronic controls come in the form of circuit boards.
   7. Demonstrate how to replace electromechanical controls.
   8. Describe how controls are use in an operation.
   9. Describe how controls are used as a safety.
   10. Describe how controls are used for energy management functions.

D. Demonstrate an understanding of basic electronic control circuit boards.
   11. Describe how circuit boards can be used to troubleshoot electronic problems.
   12. Describe how circuit boards can protect electronic components from damage.
   13. Describe how circuit boards can monitor voltage supplied to a unit.
   14. Describe how circuit boards can control the sequence of operation of electrical components.

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.