# COURSE SYLLABUS

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| **LAST REVIEW** | Fall 2022 |
| **COURSE TITLE** | Heating-Electric |
| **COURSE NUMBER** | HVAC 0225 |
| **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 DESCRIPTION**
This course will cover the fundamentals of residential electrical heating and indoor air quality (IAQ). Each system will be studied and discuss as to efficiency, relative purchase cost, operation cost, and troubleshooting problems.

**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. Electric Heat
   A. Introduction
   B. Unit Heaters
   C. Central Forced Air Electric Furnaces
   D. Control Circuits for Forced Air Electric Furnaces

**COURSE LEARNING OUTCOMES AND COMPETENCIES**

Upon successful completion of this course, the student will:

A. Describe an understanding of the efficiency and relative operating cost of electric heat.
   1. Demonstrate a written cost comparison between the gas and electric furnaces.
   2. Describe calculation of heating needs based on cubic footage.
   3. Describe elements of heat transfer in calculations.
   4. Describe the advantages/disadvantages of gas vs electric
   5. Explain the relationship of kW and btu/h cost.
   6. Define and describe kW and btu/h cost elements in each system

B. Explain the different types of electric heaters and state their uses.
   7. Describe the theory of radiant heat.
   8. Explain the concept of convection heat.
   9. Explain the concept of conduction heat.
   10. Describe the relationship between the kW kilowatt and the BTU (British thermal unit).

C. Demonstrate how sequencers operate in electric forced-air furnaces.
   11. Describe how the sequencer utilizes a bimetal snap-disc to initiate operation.
   12. Demonstrate how a volt-meter is used to test a sequencer to determine if the circuit is open or closed.
   13. Demonstrate that a sequencer is active by heat from the heat-string.
   14. Describe the use of sequencers to stage elements.

**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.