SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 47.0201
SEMESTER: Departmental Syllabus
COURSE TITLE: Electrical Theory 1
COURSE NUMBER: HVAC0105
CREDIT HOURS: 2
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: KCKCC issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: HVAC0101

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com/, for the required texts for your particular class.

COURSE DESCRIPTION:
This course will introduce students to basic electricity and electrical components. The course will start with the movement of electrons, conductors, insulators, direct and alternating current and electrical units of measurement.

METHOD OF INSTRUCTION:
A variety of instructional methods may be used depending on content area. They may include but are not limited to lecture, multimedia, cooperative/collaborative learning, demonstrations labs, on-the-job, internships, and other learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Basic Electricity and Magnetism
A. Structure of Matter
B. Movement of Electrons
C. Conductors
D. Insulators
E. Electricity Produced from Magnetism
F. Direct Current
G. Alternating Current
H. Electrical Units of Measurement
I. The Electrical Circuit

EXPECTED LEARNER OUTCOMES:
A. The student will be able to describe the structure of an atom.
B. The student will be able to demonstrate an understanding of what makes a good conductor.
C. The student will be able to demonstrate an understanding of how magnetism works.
D. The student will be able to understand the difference between alternating current and direct current.
E. The student will be able to list the six units of measurement for electricity.
F. The student will be able to understand the difference between series and parallel circuits.

COURSE COMPETENCIES:

The student will be able to describe the structure of an atom.
1. The student will be able to explain Protons
2. The student will be able to explain Electrons
3. The student will be able to explain Neutrons

The student will be able to demonstrate an understanding of what makes a good conductor.
4. The student will be able to explain copper as a conductor.
5. The student will be able to explain silver as a conductor.

The student will be able to demonstrate and understanding of how magnetism works.
6. The student will be able to demonstrate A coil with and electric current flowing through the loops of wire will cause an iron bar to be attracted into it. Switching devices designed to use this action are solenoids, relays, and contractors.

The student will be able to understand the difference between alternating current and direct current.
7. The student will be able to demonstrate an electrical current produced to flow in one direction is called direct current (DC).
8. The student will be able to demonstrate an electrical current that continually reverses itself is called alternating current (AC).

_The student will be able to list the six units of measurement for electricity._

9. The student will be able to explain voltage.

10. The student will be able to explain an ampere.

11. The student will be able to explain an ohm.

12. The student will be able to explain capacitance.

13. The student will be able to explain microfarad.

14. The student will be able to explain impedance.

_The student will be able to understand the difference between series and parallel circuits_

15. The student will be able to demonstrate the voltage is divided across the different resistances.

16. The student will be able to demonstrate the total current flows through each resistance or load.

17. The student will be able to demonstrate the resistances are added together to obtain the total resistance. The formula for calculating total resistance in a series circuit is as follows:

\[ R_{total} = R_1 + R_2 + R_3 \]

18. The student will be able to explain \( R_{total} = R_1 + R_2 + R_3 \)

19. The student will be able to demonstrate the total voltage is applied across each resistance.

20. The student will be able to demonstrate the current is divided between the different loads according to their individual resistances, and the total current is equal to the sum of the currents in each branch.

21. The student will be able to demonstrate the total resistance is less than the value of the smallest resistance.

**ASSESSMENT OF LEARNER OUTCOMES:**

Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation

**SPECIAL NOTES:**

This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.
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