SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 47.0201
SEMESTER: Departmental Syllabus

COURSE TITLE: Electrical Controls (Motors) 2
COURSE NUMBER: HVAC0233
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.

PREREQUISITE(S): 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 give students an understanding of electric motors. The course will cover centrifugal switches, shaded-pole motors, three-phase motors, single-phase hermetic motors, two speed motors, and variable speed motors. The course will also cover application of motors, motor controls, and troubleshooting electric motors.

METHOD 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. Motor Controls
A. Introduction to Motor Control Devices.
B. The Relay
C. The Contactor
D. Motor Starters

II. Troubleshooting Electric Motors
A. Mechanical Motor Problems
B. Belt Tension
C. Pulley Alignment
D. Checking Capacitors

EXPECTED LEARNER OUTCOMES:
A. The student will be able to explain the use of variable speed motors.
B. The student will be able to describe an understanding of three phase and single phase motors.
C. The student will be able to demonstrate an understanding of the different types of electric motor problems.
D. The student will be able to identify various mechanical problems in electric motors.

COURSE COMPETENCIES:
Upon successful completion of this course:

*The student will be able to describe the use of variable speed motors.*
1. The student will be able to explain that variable speed motors are used in many applications as most motors do not need to operate at full speed and load except during the peak temperature of the season.
2. The student will be able to demonstrate a furnace blower motor.
3. The student will be able to demonstrate a condensing fan motor.
4. The student will be able to demonstrate a compressor motor.

*The student will be able to demonstrate an understanding of three phase and single phase motors*
5. The student will be able to explain what are hertz.
6. The student will be able to explain what full-load amperage means to motors.
7. The student will be able to explain what run-load amperage means to motors.
8. The student will be able to explain what locked-rotor amperage means to motors.
9. The student will be able to explain phase shift.
10. The student will be able to demonstrate an explosion-proof motor.
11. The student will be able to describe the motor service factor.
12. The student will be able to describe what a drip proof motor can do.
13. The student will be able to explain the phase difference relationship.

*The student will be able to demonstrate an understanding of the different types of electric motor problems.*
14. The student will be able to demonstrate mechanical motor problems and solutions.
15. The student will be able to demonstrate how to adjust belt tension.
16. The student will be able to demonstrate how to adjust pulley alignment.
17. The student will be able to demonstrate how to check capacitors for micro-farads.
18. The student will be able to explain how the motor windings work.
19. The student will be able to explain the importance of wiring and connectors.
20. The student will be able to describe the purpose of valve plates in motors.
21. The student will be able to identify the different types of motor gaskets.
22. The student will be able to demonstrate bearings maintenance.
23. The student will be able to demonstrate how to properly check the oil levels.
24. The student will be able to explain the law of friction applied to motors.
25. The student will be able to explain the problem of excessive heat.

The student will be able to identify various mechanical problems in electric motors.

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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