COURSE SYLLABUS

LAST REVIEW   Fall 2022

COURSE TITLE   Actuator and Sensor Systems

COURSE NUMBER   AMFT 0131

DIVISION   Career and Technical Education

DEPARTMENT   AMFT

CIP CODE   15.0406

CREDIT HOURS   3

CONTACT HOURS/WEEK   Class: 1   Lab: 4

PREREQUISITES   None

COREQUISITES   None

COURSE PLACEMENT   None

COURSE DESCRIPTION
This course examines types, installation and troubleshooting of industrial actuators and sensors. Contemporary control methods in process control and proportional-integral-derivative (PID) process loops are covered in this course. (KBOR aligned)

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 assess hazards, mitigate risk, and develop procedures and protocol to create a safe working environment.
2. Student will be able to collaborate with team members in developing a plan to maximize efficiency in a production facility.
3. The student will be able to evaluate implicit tasks and identify necessary resources to install and maintain industrial equipment.
4. Student will be able to troubleshoot and repair industrial equipment in the high stress environment of modern manufacturing.

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.   Identify different characteristics of several Industrial Controls Classifications
     II.   Identify characteristics of open loop controls system and discrete control systems
     III.   Identify characteristics and types of closed Loop controls systems
     IV.   Identify considerations regarding sensors and actuators
     IV.   Comprehend laws governing transducer principles
     V.   Understand correlation between input signal and output signal
     VI.   Demonstrate in lab the input variable entered and the output variables received.

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

    A.   The student will be able to demonstrate the safety procedures when working with automated controls.
    B.   The student will be able to identify the components of a closed loop system.
    C.   The student will be able to describe the principles of a proportional-integral-derivative (PID) process loop.
    D.   The student will be able to describe the types and operation of control system input devices
    E.   The student will be able to describe the types and operation of control system output devices.
    F.   The student will be able to select the proper wiring and cabling of actuators and sensors.
    G.   The student will be able to demonstrate the operation of actuators and sensors in a closed loop system.
    H.   The student will be able to demonstrate the process of control system troubleshooting.

ASSESSMENT OF COURSE LEARNING OUTCOMES
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.