

COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	Programmable Logic Controllers (PLC)
COURSE NUMBER	AMFT 0121
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 programmable logic controllers (PLC). Hardware and programming aspects, as well as ladder logic symbols and operations necessary to develop a PLC program 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. Safety procedures when working with programmable logic controllers
- II. Numbering systems in Binary, Decimal, Octal, Hexadecimal and BCD.
- III. Boolean algebra, truth table and logic gate functions
- IV. Programmable logic controller Hardware
- IV. PLC wiring principles
- V. Connect a programmable logic controller to a programming device
- VI. Instructions used in programmable logic controller relay ladder logic
- VII. Download to PLC
- VIII. Online troubleshooting of PLC

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 programmable logic controllers.
- B. The student will be able to identify the types and components of a programmable logic controller.
- C. The student will be able to connect a programmable logic controller to a programming device.
- D. The student will be able to select the proper wiring and terminations of inputs and outputs.
- E. The student will be able to identify the numbering systems used in programmable logic controllers.
- F. The student will be able to identify the symbols used in programmable logic controller relay ladder logic.
- G. The student will be able to develop a functional programmable logic controller program.
- H. The student will be able to document a programmable logic controller program.
- I. The student will be able to demonstrate the process of programmable logic controller 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>.