COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	Industrial Systems Integration
COURSE NUMBER	AMFT 0240
DIVISION	Career and Technical Education
DEPARTMENT	AMFT
CIP CODE	15.0406
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: .5 Lab: 5
PREREQUISITES	AMFT 0141, AMFT 0150, AMFT 0221
COREQUISITES	None
COURSE PLACEMENT	None

COURSE DESCRIPTION

The purpose of this program is to be introduced to how automated machine processes can be integrated with other systems within a manufacturing environment to control equipment and share its data information with other systems. This course will introduce networking fundamentals and layout diagrams of both industrial networking and business networking. This course will cover (IioT) Industrial Ethernets of Things. This course will cover using networking signals rather than electrical handshakes to manipulate electromechanical controls such as Variable Frequency Drives. Also covered will be communication enable and disable of processes within shared systems. This course will discuss SAP systems to gain an understanding of how modern manufacturing utilized their sites main operating database to interact with and control machine processes. Finally, the course will discuss utilizing the lab to introduce change machine process thought information received from a database management system.

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. Industrial Networking Principles and Fundamentals.
II. Basic Computer networking fundamentals
III. Communications wiring and cabling practices
IV. (IioT) "Industrial Internet of Things" introduction
V. Control using electrical signal vs. digital signal
VI. HMI (Human Machine Interface) & PLC Design concepts
VII. Exchanging Data between equipment vs. manufacturing business data base system
VIII. Networking Principles and design considerations
IX. Diagrams and documentation for network architecture
X. SAP and ERP Systems concepts

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

A. The student will be able to discuss networking hardware and software.
B. The student will be able to interpret network diagrams.
C. The student will be able to utilize computer commands to test network connectivity.
D. The student will be able to establish communications between various control systems.
E. The student will be able to establish communications to exchange data from data base.
F. The student will be able to connect separate control systems together to change machine process.
G. The student will be able to connect control systems to data base to change machine process.
H. The student will be able to complete labs to specification and make diagrams.

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.