Alexandria Technical and Community College

MFGT 2564: Manufacturing Automation Lab

A. COURSE DESCRIPTION

Credits: 2
Lecture Hours/Week: *. *
Lab Hours/Week: 4
OJT Hours/Week: *. *
Prerequisites: None
Corequisites: None
MnTC Goals: None

This course is designed to provide the learner with an understanding of and the knowledge and application skills needed in the area of automation as used in manufacturing. The learner will learn to recognize and apply sensing methods, actuation methods, and control methods to industrial automation. Emphasis will be placed on the most common industrial control methods used in manufacturing.

B. COURSE EFFECTIVE DATES: 08/22/2011 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Implement basic automation principles.
2. Implement selected identification techniques in automation.
3. Integrate PLCs into an automation project.
4. Implement industrial network basics.
5. Implement selected industrial network protocol(s).
6. Integrate selected automation standards.
7. Recognize open and closed loop control.
8. Implement stepper and/or servo motor technology.
9. Complete an integrate automation project.

D. LEARNING OUTCOMES (General)

1. The learner will gain hands-on experience with general industrial control hardware. The learner will be introduced to an array of specialty automation sensors such as bar code, laser scanning, and visions systems. The learner will gain hands-on experience with data communication network configuration methods used in industrial control. These will include networks at the device, plant and enterprise level. The focus of this portion of the course is an understanding of network architecture in automation as well as the basics of fieldbus configuration and troubleshooting.
2. The learner will gain hands-on experience with motors as they apply to industrial control. The primary focus will be on basic motor design and understanding of which motor type is appropriate in given applications. Emphasis will be on stepper and servo-motor technology. The learner will practice the basic steps in configuring, controlling, and troubleshooting simple servo-motor systems. Applications will be introduced that demonstrate the principles of and differences between open-loop vs. closed-loop control.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None
F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted