

Minnesota State College Southeast

INDS 1670: Advanced PLCs

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course explores advanced Programmable Logic Controller (PLC) concepts including the integration of timers, counters, and sensors into hardware and software applications. This includes implementation of advanced Human Machine Interface operations, Variable Frequency Drive (VFD) control, and close-loop control algorithms. (Prerequisites: none) (3 credits: 2 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 02/01/2019 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Incorporation of analog and digital signal controls
2. Variable Frequency Drive (VFD) and Human Machine Interface (HMI) applications
3. Close-loop control

D. LEARNING OUTCOMES (General)

1. Advanced Graphical User Interface Components using FactoryTalk View ME. This includes more details around the following concepts
 - a. Alarms
 - b. Templates
 - c. Recipes
 - d. Increase Security (User Groups)
 - e. Using different Human Machine Interface (HMI) Widgets
 - f. Creating Displays specifically Print Displays
 - g. Triggers
 - h. Keeping history of display navigation
 - i. Diagnostics
 - j. Supporting multiple languages
 - k. Create Advanced Graphics using the Graphics Editor
2. Advanced Data Handling
 - a. Gain a better understanding of Arrays, Copy, Move, Masked Move instructions
 - b. Program a Copy instruction to copy recipe data from one array to another.
3. Advanced closed loop concepts
 - a. Using proportional algorithms for closed loop system
 - b. Using PID algorithms for closed loop systems
4. Integrating Counters, Timers and Sequencers
5. Get System Values (GSV) and Set System Values (SSV)
6. Enhanced Motor Control mechanisms using Variable Frequency Drives (VFD)
7. Integration of Human Machine Interfaces (HMI) with a Motor controlled by a Variable Frequency Drive (VFD)

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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted