MECH 1630: Advanced PLC Programming

A. COURSE DESCRIPTION

Credits: 3
Lecture Hours/Week: 1
Lab Hours/Week: 4
OJT Hours/Week: *.*

Prerequisites:
This course requires the following prerequisite
   MECH 1620 - Programmable Controllers

Corequisites: None
MnTC Goals: None

This course introduces students to Studio 5000 software and Controllers. Students will utilize tag based programming to create ladder logic program for industrial programming. Function block programming and structured text programming will also be introduced and applied. (Prerequisite: MECH1620) (3 Credits: 1 lecture/2 lab)

B. COURSE EFFECTIVE DATES: 05/12/2020 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Studio 5000 Structure & Layout
2. Ladder Logic Programming
3. Function Block Programming
4. Structured Text Programming
D. LEARNING OUTCOMES (General)
   1. Commission a Studio 5000 programmed PLC
   2. Identify layer one components to communicate
   3. Install the layer one components to communicate
   4. Identify and utilized needed drivers
   5. Configure device addresses
   6. Explore tag addressing
   7. Create a project
   8. Create tags
   9. Create tasks
  10. Create programs
  11. Create routines
  12. Program XIO & XIC commands
  13. Program OTE, OTL and OTU commands
  14. Program the One Shot, and MOV and MVM commands
  15. Program Timers, Counters and Subroutines
  16. Program Math, Comparison, and sequencing instructions
  17. Program "IF THEN" statements
  18. Program "ELSIF" statements
  19. Program assignment statements
  20. Program arithmetic operators and combination logic
  21. Program Boolean Function Block (FB) instructions
  22. Program FB Timers
  23. Program FB Counters
  24. Program FB Math instructions
  25. Utilize IREFs, OREFs, OCONs, and ICONs.
  26. Utilize multiple sheets
  27. Troubleshoot all programming
  28. Correct all programming

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted