MECH 1610: Basic Industrial Controls

A. COURSE DESCRIPTION
   Credits: 3
   Lecture Hours/Week: 1
   Lab Hours/Week: 2
   OJT Hours/Week: *.*
   Prerequisites: None
   Corequisites: None
   MnTC Goals: None
   This course introduces students to industrial control components and systems. Digital industrial electrical
devices such as switches, sensors, relays and motor starters are used in hands on labs. 3Ø motors and
Variable Frequency Drives (VFDs) are also covered. Ladder diagrams will be a focus of this course and
students will use equipment manuals and diagrams to build industrial electrical circuits. Students will also
be introduced to residential electrical wiring. (Corequisite: None) (3 Credits: 1 lecture/2 lab)

B. COURSE EFFECTIVE DATES: 01/13/2020 - Present

C. OUTLINE OF MAJOR CONTENT AREAS
   1. Interpreting Ladder Diagrams
   2. Drawing Ladder Diagrams
   3. Building Industrial Control Circuits
   4. Apply Motor Protection to a Three Phase Motor
   5. Control a Three Phase Motor With a VFD
D. LEARNING OUTCOMES (General)
1. Explore ladder diagrams
2. Create ladder diagrams
3. Investigate electrical pilot devices
4. Draw circuits with lights and switches.
5. Build circuits with lights and switches.
6. Investigate timing and non-timing relays
7. Draw circuits with relays and timing relays.
8. Build circuits with relays and timing relays.
9. Explore digital sensors and switches
10. Draw circuits with photoelectric and proximity switches.
11. Build circuits with photoelectric and proximity switches.
15. Build circuits with a 3Ø motor.
16. Explore VFDS
17. Draw circuits with a VFD.
18. Build circuits with a VFD.
19. Explore Basic residential electrical wiring
20. Construct a basic residential outlet electrical circuit.
21. Construct a basic residential lighting control electrical circuit.

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

F. LEARNER OUTCOMES ASSESSMENT
As noted on course syllabus

G. SPECIAL INFORMATION
None noted