

Minnesota State College Southeast

MECH 1610: Basic Industrial Controls

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 1

Lab Hours/Week: 4

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.
12. Draw circuits with motor starters.
13. Build circuits with motor starters.
14. Investigate circuits with a 3Ø motor.
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