

# Minnesota State College Southeast

## MECH 1632: Process Control Systems

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 1

Lab Hours/Week: 4

OJT Hours/Week: \*.\*

Prerequisites:

This course requires the following prerequisite  
MECH 1630 - Advanced PLC Programming

Corequisites: None

MnTC Goals: None

This course introduces students to the concept of automatic process control on the technician level. Students will be introduced to controller functions and effects such as proportional, integral and derivative and how different combinations of each cause controller outputs and inputs to respond in open and closed loops. Practices digital controller configuration and loop tuning for level, pressure, flow, and temperature. (Prerequisite: MECH1630) (3 Credits: 1 lecture/2 lab)

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

### C. OUTLINE OF MAJOR CONTENT AREAS

1. The four modes of process control
2. Temperature control systems
3. Pressure control systems
4. Level control systems
5. Flow Control Systems

#### **D. LEARNING OUTCOMES (General)**

1. Explore digital process control systems
2. Build a digital process control system
3. Investigate Proportional control
4. Investigate integral control
5. Investigate IO devices in a temperature control system
6. Examine control devices in a temperature control system
7. Build and control temperature with a process control system
8. Troubleshoot a temperature control system
9. Investigate IO devices in a pressure control system
10. Examine control devices in a pressure control system
11. Build and control pressure with a process control system
12. Troubleshoot a pressure control system
13. Investigate IO devices in a fluid level control system
14. Examine control devices in a fluid level control system
15. Build and control fluid level with a process control system
16. Troubleshoot a fluid level control system
17. Investigate IO devices in a fluid flow control system
18. Examine control devices in a fluid flow control system
19. Build and control fluid flow with a process control system
20. Troubleshoot a fluid flow control system

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

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted