

Minnesota State College Southeast

MECH 1640: Integrated Industrial Systems

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 integrated industrial control components and systems. Students will utilize a PLC to control multiple machine control systems. Starting with that plc the student will add modular IO and remote IO for field devices. Adding a HMI Students will simulate a machine system that also includes a VFD and servo drive. With all of these devices in the same system the student will develop an understanding of machine control structures, addressing and control. (Corequisite: MECH1630) (3 Credits: 1 lecture/2 lab)

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

C. OUTLINE OF MAJOR CONTENT AREAS

1. HMI Programming
2. Remote IO Integration
3. VFD Integration
4. Servo Drive Integration

D. LEARNING OUTCOMES (General)

1. Explore FactoryTalk View software
2. Commission a HMI
3. Identify and connect need power and communications for an HMI
4. Identify objects for HMI application
5. Program objects for HMI Application
6. Develop Screens
7. Save and download created applications
8. Troubleshoot the HMI operation in the system
9. Correct any issues with the HMI integration
10. Identify the components for a Remote IO system
11. Identify and connect needed power and communications for a remote IO system
12. Connect field devices to a remote IO system
13. Integrate remote IO field devices in a PLC system
14. Troubleshoot the Remote IO operation in the system
15. Correct any issues with the Remote IO integration
16. Identify the components needed to add a VFD to an integrated system
17. Identify and connect needed power and communications needed to add a VFD to an integrated system
18. Configure the drive for communications
19. Program the VFD to be controlled by the Integrated system
20. Troubleshoot the VFD operation in the system
21. Correct any issues with the VFD integration
22. Identify the components needed to add a Servo Drive to an integrated system
23. Identify and connect needed power and communications needed to add a Servo Drive to an integrated system
24. Configure the Servo Drive for communications
25. Program the Servo Drive to be controlled by the Integrated system
26. Troubleshoot the Servo Drive operation in the system
27. Correct any issues with the Servo Drive integration

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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted