

CAYUGA COMMUNITY COLLEGE

INTRODUCTION TO ELECTRO- MECHANICAL CONTROL SCHEMATICS

CATALOG DESCRIPTION

This course will investigate how blueprints are used for show process control logic for various mechanical and electrical systems. Parameters like temperature, level, flow and pressure controls are integrated in piping and electrical diagrams to make a functional system. Focus is on learning basic control logic and using the schematics to troubleshoot. The course will be taught in a hybrid format. Prerequisite of Trade Math or equivalent required. 30 hours

LEARNING OUTCOMES

Upon completion of this course a student will be able to:

- Understand the purpose, format and use of engineering schematics
- Understand how process control can be shown on a drawing
- Understand the general information and standards used on electrical and mechanical blueprint schematics.
- Demonstrate the ability to read and understand electrical schematics
- Demonstrate the ability to read and understand mechanical schematics
- Demonstrate how electrical and mechanical schematics can be used to troubleshoot system / component failures.

COURSE OUTLINE

1. Basic Schematics
 - a. Course goals and objectives
 - b. Concept of process flow and monitoring
 - c. Standards and general layout of engineering drawings
 - i. Format, revision, scales, etc.
 - ii. How schematics are developed by engineers and used by operators and maintenance staff
 - d. Review the various type of engineering schematics
 - i. Medium voltage electrical systems one lines
 - ii. Component electrical wiring diagrams
 - iii. Mechanical process piping and instrumentation drawings
 - iv. System controls diagram and ladder logic
 - e. Tracing a circuit/ piping system.
2. Symbols, graphics and schematic structure
 - a. Electrical systems components
 - b. Mechanical systems components

3. Reading Basic Electrical Schematics
 - a. Medium voltage systems one line drawings
 - b. Component wiring diagrams
 - c. Basic Ladder logic diagrams
 - d. Complex control drawings

4. Reading Basic Mechanical Schematics
 - a. Basic piping system drawing
 - b. HVAC system drawings

5. Using schematics for troubleshooting
 - a. Troubleshooting Skills
 - b. Component circuit wiring tracing
 - c. System circuit tracing

METHOD OF INSTRUCTION

This course will be taught roughly 50% lectures, 50% online with independent study

COURSE MATERIALS

Text: Schematics and Readings to be handed out day one of the course.

Fulton Campus

Learning Commons/Center for Academic Success
315-593-9328