Course Information Form (CIF)

Course Code: ELT 179
Course Title: Industrial Control Devices

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 47.0105
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 2-2-3
Credit Hour Distribution:

Lecture: 2	Lab: 2	Clinical: 0	**Total: 3**

General Course Information

Catalog Description

Introduction to the electronic control devices and systems used in industry: interface devices, drives, controllers, motors, process control and instrumentation, industrial process techniques, detectors, sensors, and programmable controllers.

General Course Objectives

The students shall be able to read ladder diagrams, construct industrial logic circuits as defined by ladder diagrams, and troubleshoot typical industrial circuits.

Minimum Placement Levels

English	Reading	Math
None	None	None

Prerequisites

None

Methods of Evaluation

Minimum of 6 quizzes, midterm, and final exam. Minimum of 10 labs. In-class and/or homework assignments recommended.

Instructional Materials and Additional Supplies

Electrical Motor Controls for Integrated Systems, 978-0-8269-1226-8
Safety glasses

Course Content

General Learning Outcomes (GLOs)

- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Safety Equipment and Procedures: Rules, OSHA Safety Color Codes, Fire Safety, Equipment Safety, Hazardous Areas	1. Discuss safety practices and procedures for the lab and equipment. 2. Follow all written and verbal safety practices and procedures.	2	2	0
Control Diagrams and Schematics, Combinational and Sequential Logic	1. Identify schematic symbols; discuss rules for constructing ladder diagrams. 2. Identify logic functions by symbol, equation, table, or description. 3. Identify and describe sequential control symbols. 4. Construct and test combinational and sequential control circuits from a ladder diagram.	4	4	0
Mechanical and Electronic Input Control Devices	1. Describe mechanical and electronic input devices, including mechanical, hand-operated, pressure, level, and temperature input devices. 2. Demonstrate the ability to connect and test.	4	4	0
Electronic Control Components: Diodes, Thyristors	1. Describe the function of thyristor devices. 2. Discuss applications of thyristors. Connect and test.	2	2	0
SSRs (Solid State Relays)	1. Compare and contrast SSRs and EMRs. 2. Discuss SSR control and output options. 3. Connect and test SSR control circuits.	2	2	0
Electro-Mechanical Control Elements, Indicators, Relays and Contactors, Motors	1. Discuss the configuration and connection of control elements. 2. Connect and verify proper operation of control elements.	4	4	0
Heating and Cooling Control Systems	1. Describe heating and cooling control and load devices. 2. Describe the sequence of operation for home HVAC systems. 3. Connect and test control system components.	6	6	0
Micro Programmable Logic Controllers	1. Define Micro PLCs and their applications. 2. Develop code and verify proper operation of PLC program in control application.	6	6	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0