



# Program Planning Guide

## Industrial Systems Technology, Electrical Controls Certificate (C5024010)

**Program Length:** 4 semesters

**Program Sites:** Lee Main Campus, Day Program

**Career Pathway Options:** Associate in Applied Science in Industrial Systems Technology, Diploma in Industrial Systems Technology, Certificate in Electrical Controls

Suggested Course Schedule		Class	Lab	Work	Credits	Notes:
<b>1st Semester (fall)</b>						
ELC 112	DC/AC Electricity	3	6	0	5	
<b>Total Semester Hours</b>		<b>3</b>	<b>6</b>	<b>0</b>	<b>5</b>	
<b>2nd Semester (spring)</b>						
ELC 128	Intro to PLC	2	3	0	3	
ELN 231	Industrial Controls	2	3	0	3	
<b>Total Semester Hours</b>		<b>4</b>	<b>6</b>	<b>0</b>	<b>6</b>	
<b>3rd Semester (summer)</b>						
ISC 110	Workplace Safety	1	0	0	1	
<b>Total Semester Hours</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	
<b>4th Semester (fall)</b>						
ELC 117	Motors and Controls	2	6	0	4	
<b>Total Semester Hours</b>		<b>2</b>	<b>6</b>	<b>0</b>	<b>4</b>	
<b>Total Semester Hours Credit Required for Graduation: 16</b>						



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## Course Descriptions

### **ELC 112          DC/AC Electricity**

This course introduces the fundamental concepts of and computations related to DC/AC electricity. Emphasis is placed on DC/AC circuits, components, operation of test equipment; and other related topics. Upon completion, students should be able to construct, verify, and analyze simple DC/AC circuits.

### **ELC 117          Motors and Controls**

This course introduces the fundamental concepts of motors and motor controls. Topics include ladder diagrams, pilot devices, contactors, motor starters, motors, and other control devices. Upon completion, students should be able to properly select, connect, and troubleshoot motors and control circuits.

### **ELC 128          Introduction to PLC**

This course introduces the programmable logic controller (PLC) and its associated applications. Topics include ladder logic diagrams, input/output modules, power supplies, surge protection, selection/installation of controllers, and interfacing of controllers with equipment. Upon completion, students should be able to understand basic PLC systems and create simple programs.

### **ELN 231          Industrial Controls**

This course introduces the fundamental concepts of control of rotating machinery and associated peripheral devices. Topics include rotating machine theory, ladder logic, electromechanical and solid state relays, motor controls, pilot devices, three-phase power systems, and other related topics. Upon completion, students should be able to interpret schematics and demonstrate an understanding of electromechanical and electronic control of rotating machinery.

### **ISC 110          Workplace Safety**

This course introduces the basic concepts of workplace safety. Topics include fire, ladders, lifting, lock-out/tag-out, personal protective devices, and other workplace safety issues related to OSHA compliance. Upon completion, students should be able to demonstrate an understanding of the components of a safe workplace.