COURSE OUTLINE

ELR824

Prepared: Sasha Coleman   Approved: Corey Meunier

Course Code: Title	ELR824: INSTALLATION METHODS - LEVEL 3
Program Number: Name	
Department:	ELEC. APPRENTICES
Semester/Term:	18W
Course Description:	The student will develop an understanding of the hardware and software associated with the Allen Bradley ControlLogix 5000 family PLCs. PLC programming techniques using RSLogix 5000 software will be used to design, document and commission basic to intermediate PLC lab assignments.
Total Credits:	8
Hours/Week:	4
Total Hours:	40
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	Lab demonstrations 45% Lab write-ups 45% Attendance and Participation 10% Totals 100% *The student must complete and demonstrate all labs in order to receive a passing grade for the lab demonstration portion of evaluation. *The student must achieve a passing grade in both lab demonstrations and lab write-ups in order to achieve a passing grade for the course. Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00

D 50 - 59% 1.00
F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
S Satisfactory achievement in field /clinical placement or non-graded subject area.
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR Grade not reported to Registrar`s office.
W Student has withdrawn from the course without academic penalty.

Course Outcomes and Learning Objectives:

Course Outcome 1.

Describe the function and basic operation of a PLC and understand the related terminology including numbering system.

Learning Objectives 1.

 • Describe the function of a PLC and state its applications
 • State the major advantages of a typical programmable logic controller(PLC) over conventional hardware relay systems
 • Identify the four major components of a typical PLC and describe the functions of each
 • Identify the two distinct types of memory
 • Understand decimal, binary, octal, hexadecimal, binary coded decimal (BCD) numbering systems
 • Perform conversions from one system to another

Course Outcome 2.

Understand the I/O addressing and hardwiring requirements.

Learning Objectives 2.

 • Define the term discrete and the term analog
 • Describe the I/O section of a PLC
 • Define the term interposing relay
 • Define the term optical isolation
 • Understand the concept of base and alias tags
 • Relate the I/O addressing to physical location
 • Describe the proper wiring connections for input/output devices and their corresponding modules
 • Describe how basic AC and DC input and output modules work and create a wiring diagram

Course Outcome 3.

Develop and demonstrate basic programming techniques for AB ControlLogix 5000 PLC`s using RSLogix 5000 Software.

Learning Objectives 3.

 • Describe basic programming techniques

- Understand the Examine ON, OFF, timers, counters, move, limit test, sequencers and internal storage instructions
- Describe the Force On and Off features and hazards that could be associated with both
- Program basic PLC functions offline
- Program PLC`s to control
- Hard-wire PLCs to field equipment and input/output cards
- Create documentation to add to a PLC program

Course Outcome 4.

Demonstrate the ability to write basic PLC programs to control various electrical equipment in the lab and run the programs on a PLC.

Learning Objectives 4.

- Download a program to a PLC from a remote PC over Ethernet to a particular PLC in the Lab
- Edit online programs
- Upload a program to a PC from a PLC
- Program basic PLC functions online
- Program PLCs to control motors, traffic lights
- Download a program to a local PLC and run a program

Course Outcome 5.

Demonstrate the ability to connect PLCs to control various electrical equipment in the lab and run the programs in a PLC in the lab.

Learning Objectives 5.

- Hard-wire PLCs to field equipment and I/O cards
- Hardwire PLCs to control motors and traffic lights
- Troubleshoot PLC control systems

Date:	Wednesday, February 28, 2018

Please refer to the course outline addendum on the Learning Management System for further information.