COURSE OUTLINE: ELR300 - CONTROLS III

Prepared: Randy Clouthier
Approved: Corey Meunier, Dean, Technology, Trades, and Apprenticeship

Course Code: Title	ELR300: ELECTRICAL AND ELECTRONIC CONTROLS III
Program Number: Name	4039: MECH. ENG. TN-MANUFA
Department:	ELECT./INSTRUMENTATION PS
Academic Year:	2024-2025
Course Description:	This course will develop the student`s basic knowledge of electric and electronic terminology, schematics and applications of programmable logic controllers (PLCs)
Total Credits:	2
Hours/Week:	1
Total Hours:	14
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4039 - MECH. ENG. TN-MANUFA** VLO 3 Comply with current health and safety legislation, as well as organizational practices and procedures. VLO 6 Analyze and solve mechanical problems by applying mathematics and fundamentals of mechanical engineering.
Essential Employability Skills (EES) addressed in this course:	EES 4 Apply a systematic approach to solve problems.
General Education Themes:	Civic Life Science and Technology
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	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W Student has withdrawn from the course without academic penalty. Smart watches and similar devices are not allowed during tests and quizzes.

Books and Required Resources:

Instructor provided resourses

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. To develop the student`s basic knowledge of electric and electronic terminology, schematics and applications.	1.1 Describe the types of electrical and electronic devices such as: - Magnetism - Transformers (step up, step down, and isolation) - Contacts - Push button switches, jog and start-up 1.2 Apply electric/electronic theory of controls. 1.3 Describe the principles and operations of: - AC Motors - DC Motors - Stepping Motors 1.4 Describe the hook-up of single and three-phase motors with a control circuit. 1.5 Interpret electrical schematic symbols and ladder diagrams. 1.6 Introduce main logic gates.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Describe the functions and applications of programmable logic controllers (PLCs) and processors.	2.1 Describe PLC documentation and addressing. 2.2 Describe rung logic: - Start/stop - Latches - Timers - Interlocking 2.3 Explore menus, and ladder diagrams. 2.4 Perform diagnostic program checking to use the PLC as a troubleshooting tool. 2.5 Describe the operations of sensors, relays, limit switches, micro switches, pressure switches, time delay switches, and proximity switches.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments/Participation	20%
Tests	80%

Date:

August 19, 2024

Addendum:

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

information.