COURSE OUTLINE: ELR621 - ELECTRONICS I

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	ELR621: ELECTRONICS - LEVEL 1
Program Number: Name	6520: CONST & MTCE ELE BAS
Department:	ELEC. APPRENTICES
Semesters/Terms:	20F, 21W, 20F
Course Description:	The student will demonstrate a basic understanding of semiconductor devices and their applications, including simple digital logic devices and circuits.
Total Credits:	5
Hours/Week:	4
Total Hours:	32
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems.
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:	To achieve an overall passing grade, the student must pass both the Theory and Lab portions of 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 W Student has withdrawn from the course without academic penalty.

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.

Books and Required Resources:

Electronics For Electricians by Stephen L. Herman
Edition: Current

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Demonstrate a basic knowledge of electronic devices and circuits including series, parallel and combination DC circuits, diodes, LEDs, NPN and PNP bipolar transistors used as a switch, and logic gates.	1.1 Describe TTL and CMOS logic gate technology 1.2 Describe the operation of basic logic gates including NOT, AND, OR, NAND and EXCLUSIVE OR gates 1.3 Identify the schematic symbols, both North American and European, for basic logic gates. 1.4 Demonstrate the use of basic logic gates to create digital logic circuits. 1.5 State the Boolean equations for simple logic gates. 1.6 Design, build and test combination logic circuits using basic logic gates. 1.7 Demonstrate the use of a logic probe to troubleshoot a digital system. 1.8 Demonstrate the proper procedure for soldering and de-soldering. 1.9 State and apply the standard resistor colour code. 1.10 Connect resistors in series, parallel and combination circuits, complete with voltmeter and ammeter connections. 1.11 Describe the properties of N and P type semiconductor materials. 1.12 Describe and demonstrate the operation of a bipolar diode. 1.13 State current and voltage requirements for silicon diodes, germanium and light emitting diodes (LEDs). 1.14 Demonstrate requirements for silicon diodes, germanium diodes and LEDs to be forward and reverse biased. 1.15 Explain the important diode characteristics used when selecting replacement diodes 1.16 Describe the operation and biasing requirements of NPN and PNP transistors 1.17 Identify the schematic symbols for NPN and PNP bipolar transistors 1.18 Describe and demonstrate how a transistor can be used as a switch 1.19 Describe the operation of an opto-coupler

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Projects/Labs	50%
Tests	50%

Date:

October 6, 2020

Addendum:

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

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