COURSE OUTLINE: ELR620 - ELECTRICAL THEORY I

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	ELR620: ELECTRICAL THEORY - LEVEL 1
Program Number: Name	6520: CONST & MTCE ELE BAS
Department:	ELEC. APPRENTICES
Semesters/Terms:	18F
Course Description:	This course introduces the student to basic DC electrical theory. OHM`s Law, series, parallel, series/ parallel circuits are studied. Magnetic theory is also covered.
Total Credits:	8
Hours/Week:	6
Total Hours:	48
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. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. EES 11 Take responsibility for ones own actions, decisions, and consequences.
General Education Themes:	Science and Technology
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	Quizzes worth 5% max of final grade can be given without notice. No rewrites will be granted. It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room. 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

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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W Student has withdrawn from the course without academic penalty.

Books and Required Resources:	Delmars Standard Textbook of Electricity by Stephen L. Herman Publisher: Nelson Edition: 5 ISBN: 978-0-17-662416-3 Canadian Electrical Code C22 1-15 (20150) by CSA Publisher: Canadian Standards Association Edition: 2015

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
ATOMIC STRUCTURE ELECTRICAL QUANTITIES AND OHMS LAW STATIC ELECTRICITY	Demonstrate an understanding of atomic theory. Describe the requirements for a simple electric circuit. Define voltage, current and resistance.

Course Outcome 2	Learning Objectives for Course Outcome 2
SERIES CIRCUITS PARALLEL CIRCUITS COMBINATION CIRCUITS	Define work, power and energy. Convert between mechanical and electrical units of work, power and energy. Calculate energy in kilo-watt hours. Describe the effects of current on the human body. Apply Ohms Law to analyze series DC circuits. Apply Kirchoffs Law to analyze series DC circuits. Apply Ohms Law to analyze parallel DC circuits. Apply Kirchoffs Law to analyze parallel DC circuits. Apply Ohms Law to analyze combination DC circuits. Apply Kirchoffs Law to analyze combination DC circuits. Analyze and calculate voltage, current and power in 2-wire and 3-wire distribution systems for balanced, unbalanced and faulted. Define and calculate efficiency of electrical distribution systems.

Course Outcome 3	Learning Objectives for Course Outcome 3
Using WIRE TABLES to determine conductor sizing Conduction in liquids and gases Batteries and other sources of electricity	Perform calculations relating to wire measurements, AWG, SI units, resistivity, line loss, and temperature coefficients. Name and explain the principles of operation of common sources of EMF. Describe the characteristics of primary and secondary cells.

Course Outcome 4	Learning Objectives for Course Outcome 4
MAGNETISM MAGNETIC INDUCTION	State the Fundamental Law of Magnetism. Define permanent and temporary magnets. Describe magnetic lines of force and list their characteristics. Describe the relationship between magnetism and induced EMF.

	Evaluation Type	Evaluation Weight	Course Outcome Assessed
Evaluation Process and Grading System:	Assignments	20%	
	Test1	25%	
	Test2	35%	
	Test3	20%	

Date:	August 20, 2018
	Please refer to the course outline addendum on the Learning Management System for further information.

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