COURSE OUTLINE: ELR620 - ELECTRICAL THEORY I

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Course Code: Title	ELR620: ELECTRICAL THEORY - LEVEL 1
Program Number: Name	6520: CONST & MTCE ELE BAS
Department:	ELEC. APPRENTICES
Academic Year:	2024-2025
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.
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:	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

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W Student has withdrawn from the course without academic penalty.

Cell Phones will be turned off and put away during tests.
Smart Watches will be removed and put away turning tests.
If your phone or watch ring during a test, you will immediately hand in the test and receive a grade of 0

Books and Required Resources:

Delmars Standard Textbook of Electricity - Canadian Edition by Stephen L. Herman
Publisher: Nelson Edition: 1
ISBN: 9781778412974

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	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.

	Batteries and other sources of electricity	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 Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	20%
Quizes	5%
Test1	25%
Test2	30%
Test3	20%

Date: August 9, 2024

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