COURSE OUTLINE: ELR100 - ELECTRICAL FUNDMT DC

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Course Code: Title	ELR100: ELECTRICAL FUNDAMENTALS DC
Program Number: Name	4026: ELECTRICAL TN-PROC 4029: ELECTRICAL TY-PROCES 4127: ELECTRICAL TN-TRADES
Department:	ELECT./INSTRUMENTATION PS
Academic Year:	2024-2025
Course Description:	Upon successful completion, the student will be able to explain the principles of, and perform calculations involving: electrical quantities and units, Ohm`s (must be memorized) and Kirchhoff`s Laws, DC series, parallel, series-parallel, and voltage divider circuits, DC networks, magnetism and electromagnetism, inductance and capacitance, DC series RL and RC circuits.
Total Credits:	5
Hours/Week:	5
Total Hours:	75
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	ELN109, ELN115, ELR109
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4026 - ELECTRICAL TN-PROC** VLO 1 Interpret and produce electrical and electronics drawings including other related documents and graphics. VLO 2 Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles. VLO 3 Use, verify, and maintain instrumentation equipment and systems. VLO 6 Verify acceptable functionality and apply troubleshooting techniques for electrical and electronic circuits, components, equipment, and systems under the supervision of a qualified person. VLO 8 Use computer skills and tools to solve routine electrical related problems. VLO 16 Select electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person. **4029 - ELECTRICAL TY-PROCES** VLO 1 Analyze, interpret, and produce electrical and electronics drawings, technical reports including other related documents and graphics. VLO 2 Analyze and solve complex technical problems related to electrical systems by applying mathematics and science principles.

	VLO 3 Design, use, verify, and maintain instrumentation equipment and systems. VLO 6 Design, assemble, analyze, and troubleshoot electrical and electronic circuits, components, equipment and systems under the supervision of a qualified person. VLO 8 Use computer skills and tools to solve a range of electrical related problems. VLO 16 Select and recommend electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person. **4127 - ELECTRICAL TN-TRADES** VLO 1 Interpret and produce electrical and electronic drawings including other related documents and graphics. VLO 2 Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles. VLO 3 Use, verify, and maintain instrumentation equipment and systems. VLO 6 Verify acceptable functionality and apply troubleshooting techniques for electrical and electronic circuits, components, equipment, and systems under the supervision of a qualified person. VLO 8 Use computer skills and tools to solve routine electrical related problems. VLO 16 Select electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. 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 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 10 Manage the use of time and other resources to complete projects. 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:	In order to pass the course, the student must achieve at least 50% on the Tests portion of the final mark. Quizzes worth a maximum of 5% may be given without notice and will be included in the Assignment percentage weighting. There will be no re-writes of tests. If a student misses a test or surprise quiz without contacting the instructor, the Dean`s office or

the switchboard prior to the test or quiz, a mark of zero will be assigned with no re-write option. Smart watches or similar devices are not allowed during tests and quizzes. Mobile phones must be put away and may not be used as calculators during tests and quizzes.

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.

Books and Required Resources:

Fundamentals of Electric Circuits by David Bell
Publisher: Oxford Edition: 7
ISBN: 978-0-19-542524-6

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Analyze Series, Parallel, and Series-Parallel DC circuits containing voltage and current sources and resistors, to determine individual voltage, current and power values.	1.1 Explain the meaning of, and the relationships between, voltage, current, resistance and power 1.2 Choose an appropriate approach to analyzing a circuit based on the given information 1.3 Use Ohm`s Law (must be memorized), Kirchhoff`s Law, and other network Theorems to calculate voltage, current and power values for individual components and the total circuit
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Analyze magnetic properties of circuits and devices.	2.1 Determine the direction of magnetic flux resulting from DC current flow in a conductor 2.2 Determine the direction and strength of magnetic flux resulting from DC current flow in a coil 2.3 Determine the direction of rotation of a simple DC motor 2.4 Determine the polarity of generated voltage in a simple DC generator 2.5 Draw and label DC machine diagrams showing armature & main field fluxes and rotation
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Analyze a DC circuit containing inductors or capacitors and resistors, to determine charge and discharge characteristic	3.1 Calculate time constants and charge/discharge values for RL and RC circuits 3.2 Calculate time required for threshold voltage or current values for RL and RC circuits 3.3 Determine required component values to achieve desired

	values.	charge/discharge characteristics for RL and RC circuits

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Quizzes and Assignments	20%
Tests	80%

Date: September 18, 2024

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