



**COURSE OUTLINE: ELR100 - ELECTRICAL FUNDMT DC**

Prepared: A. Gooderham

Approved: Corey Meunier, Chair, Technology and Skilled Trades

<b>Course Code: Title</b>	ELR100: ELECTRICAL FUNDAMENTALS DC
<b>Program Number: Name</b>	4026: ELECTRICAL TN-PROC 4029: ELECTRICAL TY-PROCES 4127: ELECTRICAL TN-TRADES
<b>Department:</b>	ELECT./INSTRUMENTATION PS
<b>Semesters/Terms:</b>	18F
<b>Course Description:</b>	This is an introduction to electrical quantities and units, Ohm`s and Kirchoff`s Laws, simple DC series, parallel, series-parallel, and voltage divider circuits, simple DC network analysis, magnetism and electromagnetism, inductance and capacitance, DC series RL circuit analysis.
<b>Total Credits:</b>	5
<b>Hours/Week:</b>	5
<b>Total Hours:</b>	75
<b>Prerequisites:</b>	There are no pre-requisites for this course.
<b>Corequisites:</b>	There are no co-requisites for this course.
<b>This course is a pre-requisite for:</b>	ELN109, ELN115, ELR109
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>  Please refer to program web page for a complete listing of program outcomes where applicable.	<b>4026 - ELECTRICAL TN-PROC</b> 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.  <b>4029 - ELECTRICAL TY-PROCES</b> 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.



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	<p>VLO 8 Use computer skills and tools to solve a range of electrical related problems.</p> <p>VLO 16 Select and recommend electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person.</p> <p><b>4127 - ELECTRICAL TN-TRADES</b></p> <p>VLO 1 Interpret and produce electrical and electronic drawings including other related documents and graphics.</p> <p>VLO 2 Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles.</p> <p>VLO 3 Use, verify, and maintain instrumentation equipment and systems.</p> <p>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.</p> <p>VLO 8 Use computer skills and tools to solve routine electrical related problems.</p> <p>VLO 16 Select electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person.</p>
<b>Essential Employability Skills (EES) addressed in this course:</b>	<p>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.</p> <p>EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>EES 3 Execute mathematical operations accurately.</p> <p>EES 4 Apply a systematic approach to solve problems.</p> <p>EES 5 Use a variety of thinking skills to anticipate and solve problems.</p> <p>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>EES 10 Manage the use of time and other resources to complete projects.</p> <p>EES 11 Take responsibility for ones own actions, decisions, and consequences.</p>
<b>General Education Themes:</b>	Science and Technology
<b>Course Evaluation:</b>	Passing Grade: 50%, D
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<p>Quizzes worth a maximum of 5% can be given without notice and will be attributed to the current percentage weighting.</p> <p>No re-writes will be given for completed tests.</p> <p>If a student misses a test or surprise quiz ( maximum 5% of final grade ) without contacting the instructor, the Deans office or the switchboard prior to the test or quiz, a mark of zero will be granted without a re-write option</p> <p>Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00</p>



	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:	<table><tr><td>Course Outcome 1</td><td colspan="2">Learning Objectives for Course Outcome 1</td></tr><tr><td>1. Analyze Series, Parallel and Series-Parallel DC circuits containing voltage and current sources and resistors, to determine individual voltage, current and power values.</td><td colspan="2">1.1 Complete mathematical questions from text and assignments 1.2 Choice and use of network Theorems to aid in analysis 1.3 Completion of written test</td></tr><tr><td>Course Outcome 2</td><td colspan="2">Learning Objectives for Course Outcome 2</td></tr><tr><td>2. Analyze magnetic properties of circuits and devices.</td><td colspan="2">2.1 Determine the direction of magnetic flux present as a result of DC current flow in a conductor 2.2 Determine the direction and strength of magnetic flux present as a result of DC current flow in a coil 2.3 Determine the direction of rotation of a simple dc motor 2.4 Determine the direction of current flow in a simple dc generator 2.5 Completion of dc machine diagrams showing flux &amp; main fields and rotation 2.6 Completion of written test</td></tr><tr><td>Course Outcome 3</td><td colspan="2">Learning Objectives for Course Outcome 3</td></tr><tr><td>3. Analyze a DC circuit containing inductors or capacitors and resistors, to determine charge and discharge characteristic values.</td><td colspan="2">3.1 Completion of RL and RC circuit questions regarding time constants 3.2 Completion of RL and RC circuit questions requiring the solution of the time for threshold voltage or current achievement 3.3 Completion of written test</td></tr></table>			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 Complete mathematical questions from text and assignments 1.2 Choice and use of network Theorems to aid in analysis 1.3 Completion of written test		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 present as a result of DC current flow in a conductor 2.2 Determine the direction and strength of magnetic flux present as a result of DC current flow in a coil 2.3 Determine the direction of rotation of a simple dc motor 2.4 Determine the direction of current flow in a simple dc generator 2.5 Completion of dc machine diagrams showing flux & main fields and rotation 2.6 Completion of written test		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 values.	3.1 Completion of RL and RC circuit questions regarding time constants 3.2 Completion of RL and RC circuit questions requiring the solution of the time for threshold voltage or current achievement 3.3 Completion of written test	
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Evaluation Process and Grading System:	<table><tr><td>Evaluation Type</td><td>Evaluation Weight</td><td>Course Outcome Assessed</td></tr><tr><td>Test 1</td><td>33%</td><td></td></tr><tr><td>Test 2</td><td>33%</td><td></td></tr><tr><td>Test 3</td><td>34%</td><td></td></tr></table>			Evaluation Type	Evaluation Weight	Course Outcome Assessed	Test 1	33%		Test 2	33%		Test 3	34%							
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Date:	August 22, 2018																				
	Please refer to the course outline addendum on the Learning Management System for further																				



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