



## COURSE OUTLINE: ELR113 - INSTALL METHODS I

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<b>Course Code: Title</b>	ELR113: INSTALLATION METHODS I
<b>Program Number: Name</b>	4127: ELECTRICAL TN-TRADES
<b>Department:</b>	ELECT./INSTRUMENTATION PS
<b>Semesters/Terms:</b>	22W
<b>Course Description:</b>	This course introduces the student to electrical installation methods. The Canadian Electrical Code is covered in conjunction with interpretation of construction drawings and specifications for a residential installation.
<b>Total Credits:</b>	2
<b>Hours/Week:</b>	2
<b>Total Hours:</b>	30
<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>	ELR233
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>	<b>4127 - ELECTRICAL TN-TRADES</b>
<b>Please refer to program web page for a complete listing of program outcomes where applicable.</b>	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 4 Assemble, test, modify and maintain electrical circuits and equipment to fulfill requirements and specifications under the supervision of a qualified person.
	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 7 Analyze, assemble and troubleshoot control systems under the supervision of a qualified person.
	VLO 10 Prepare and maintain records and documentation systems.
	VLO 12 Apply health and safety standards and best practices to workplaces.
	VLO 13 Perform tasks in accordance with relevant legislation, policies, procedures, standards, regulations, and ethical principles.
	VLO 14 Configure installation and apply electrical cabling requirements and system grounding and bonding requirements for a variety of applications under the supervision of a qualified person.
	VLO 15 Assist in commissioning, testing and troubleshooting electrical power systems under the supervision of a qualified person.

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 2021-2022 academic year.



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	<p>VLO 16 Select electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person.</p> <p>VLO 17 Apply project management principles to assist in the implementation of projects.</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 6 Locate, select, organize, and document information using appropriate technology and information systems.</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>Course Evaluation:</b>	<p>Passing Grade: 50%, D</p> <p>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.</p>
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<p>Grade Definition Grade Point Equivalent</p> <p>A+ 90 - 100% 4.00</p> <p>A 80 - 89%</p> <p>B 70 - 79% 3.00</p> <p>C 60 - 69% 2.00</p> <p>D 50 - 59% 1.00</p> <p>F (Fail)49% and below 0.00</p> <p>CR (Credit) Credit for diploma requirements has been awarded.</p> <p>S Satisfactory achievement in field /clinical placement or non-graded subject area.</p> <p>U Unsatisfactory achievement in field/clinical placement or non-graded subject area.</p> <p>X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.</p> <p>NR Grade not reported to Registrar`s office.</p> <p>W Student has withdrawn from the course without academic penalty.</p>
<b>Books and Required Resources:</b>	<p>Canadian Electrical Code C22 1-15 (2015) by CSA Publisher: Canadian Standards Association Edition: 2015 Edition</p> <p>Electrical Wiring - Residential by Mullin Publisher: Nelson Canada Edition: Seventh Canadian Edition</p>

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**Course Outcomes and Learning Objectives:**

<b>Course Outcome 1</b>	<b>Learning Objectives for Course Outcome 1</b>
1. State the purpose of the Canadian Electrical Code and identify which sections apply to a given electrical installation	1.1 State the objective, scope, and general arrangement of the Canadian Electrical Code (CEC). 1.2 Identify the method used to indicate code regulation changes in new editions of the CEC. 1.3 Identify installation requirements for electrical equipment (other than heating) installed in residential occupancies as specified in the Installation of Electrical Equipment section of the CEC. 1.4 Explain terms as listed in the Object, Scope and Definitions section and the Special Terminologies located in the general rules of other sections of the CEC. 1.5 Interpret general rules (Section 2) of the CEC
<b>Course Outcome 2</b>	<b>Learning Objectives for Course Outcome 2</b>
2. Interpret rules of the Canadian Electrical Code, which apply to residential installations	2.1 Explain the CEC regulations regarding grounding and bonding (Section 10) of electrical systems and circuits operating at 750 volts or less. 2.2 Interpret the regulations of the CEC regarding wiring methods (Section 12) for installations operating at 750 volts or less. 2.3 Explain the general regulations regarding Class 1 and Class 2 signal and remote control Circuits (Section 16) of the CEC. 2.4 Calculate conduit fill where all conductors are the same size and have the same insulation type. 2.5 Calculate the maximum number of conductors sized #14 to #6 that are permitted in a box. 2.6 Calculate ampacity and apply correction factors for conductors in a raceway or multi-conductor cable. 2.7 Calculate the size of service equipment for single dwelling units. 2.8 Identify installation requirements for electrical equipment (other than electric heating) including: lighting, receptacles, heating, and appliances installed in single dwelling occupancies as specified in the Installation of Electrical Equipment Section 26 and 30 of the CEC. 2.9 Interpret the CEC regulations regarding the installation of fire alarms located in dwelling units. 2.10 Explain requirements for the installation and wiring of Fixed Electric Surface and Space Heating Systems located in residential occupancies.
<b>Course Outcome 3</b>	<b>Learning Objectives for Course Outcome 3</b>
3. Interpret specifications and drawings for a single dwelling construction project.	3.1 Identify and interpret the alphanumeric lines. 3.2 Demonstrate competency with metric scale and imperial scale and be able to convert between the two. 3.3 Read and apply residential specifications. 3.4 Use a set of drawings of a single dwelling to apply the information from the architectural, structural and mechanical drawings in relation to an electrical installation.

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3.5 Apply specifications, Building and Electrical Codes to single dwellings.  
3.6 State procedures for inspecting an installation by the appropriate authority.

**Evaluation Process and Grading System:**

<b>Evaluation Type</b>	<b>Evaluation Weight</b>
Assignments	25%
Tests (3)	75%

**Date:**

January 6, 2022

**Addendum:**

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

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