

COURSE CON2070: ELECTRICAL SYSTEMS**Level:** Intermediate**Theme:** Building Systems (Processes and Applications)**Prerequisite:** CON1010 Basic Tools & Materials**Description:** Students apply electrical principles, and develop an understanding of residential electrical code requirements and installation procedures.**Parameters:** Access to a building site and/or construction facility and to instruction from an individual with specialized training in electrical work.**Supporting Course:** CON1070 Building Construction**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> list and describe the electrical systems and components associated with residential wiring 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> the presentation of a written or oral presentation that identifies and describes the electrical systems found in a typical residence. <p><i>Assessment Tool</i> <i>Presentation/Reports: Electrical Systems, CON2070–1</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	10
<ul style="list-style-type: none"> apply wiring principles and code requirements to create a wiring diagram 	<ul style="list-style-type: none"> the development of an electrical drawing of a typical room such as a bathroom, living room or bedroom. <p><i>Assessment Tool</i> <i>Activity Assessment: Branch Wiring, CON2070–2</i></p> <p><i>Standard</i> <i>The working drawing uses standard symbols showing the location and type of outlet, light or switch. Connections between switches and lights are shown along with the electrical service entry</i> <i>Performance rating of 2 for each applicable task</i></p>	20

COURSE CON2070: ELECTRICAL SYSTEMS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply wiring skills to assist in the installation of a residential wiring system • profile a trade or occupation within the electrical field • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • installation of an electrical system to include the required switches, lights and outlets found in a typical room. <i>Assessment Tool</i> <i>Activity Assessment: Branch Wiring, CON2070–2</i> <i>Standard</i> <i>Installation meets accepted trade practice and code requirements</i> <i>Performance rating of 2 for each applicable task</i> • presentation of an occupation profile that outlines: <ul style="list-style-type: none"> – present and future employment opportunities – training centres and entry requirements – description of occupation and working conditions. <i>Assessment Tool</i> <i>Research Process: Career Opportunities in Electrical Work: CON2070–3</i> <i>Standard</i> <i>Performance rating of 2 for each applicable task</i> • observations of individual effort and interpersonal interaction during the learning process. <i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i> 	<p>60</p> <p>10</p> <p>Integrated throughout</p>

MODULE CON2070: ELECTRICAL SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Health and Safety • Electrical Principles • House Wiring Design 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify the principal hazards associated with electrical work such as shocks, burns, fire and falls • outline methods that are commonly used to prevent contact with a live electric circuit • identify the nonconducting extinguishing agents that can be used with electrical fires • describe and provide examples of: <ul style="list-style-type: none"> – alternating and direct current – series and parallel circuits • define the terms and explain the relationships between voltage, amperage and resistance in a typical circuit • identify the common types of electrical systems found in a modern home such as lighting, utility, heating, communication and alarm systems • describe the symbols that are used to indicate a wall plug, light fixture, range, dryer plug, etc., on an electrical drawing • identify the code requirements for installing outlets in a kitchen, bathroom, living room and bedroom • list and describe the types of conductors and connection devices that are used in conventional construction • identify design and framing requirements when installing electrical fixtures and wires. 	<p>Our familiarity with the use of electricity in our homes can cause us to forget that electricity can be lethal. Stress the importance of electrical safety.</p> <p>Note that the number of uses and demand for electricity in the home has increased significantly over the past decade.</p>
<p>Planning and Management</p> <ul style="list-style-type: none"> • Wiring Project • Wiring Permit 	<ul style="list-style-type: none"> • make a wiring diagram for a typical residential wiring project • prepare a list of materials for a wiring project • complete an application for a wiring permit. 	<p>Obtain a local wiring permit application form.</p>

MODULE CON2070: ELECTRICAL SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
<p>Implementation</p> <ul style="list-style-type: none"> • House Wiring • Testing 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • use the appropriate tools, materials to frame and install a typical residential wiring circuit such as a: <ul style="list-style-type: none"> – general purpose and split receptacle – single-pole and three-way switch – ceiling fixture – outside outlet – service panel • test a circuit for power, grounding and continuity. 	<p>Provide students with wiring frame or mock-up panels to complete tasks.</p> <p>Have students understand the purpose of a GFI circuit breaker and receptacle.</p>
<p>Assessment</p> <ul style="list-style-type: none"> • Career Information • Career Preparation 	<ul style="list-style-type: none"> • identify the employment and business opportunities related to an electrical trade or occupation • identify personal interests and abilities related to making realistic career choices • maintain a record of completed activities within a portfolio. 	