

COURSE ELT2030: BRANCH CIRCUIT WIRING**Level:** Intermediate**Theme:** Power Systems**Prerequisite:** ELT1030 Conversion & Distribution**Description:** Students demonstrate the fundamentals of branch circuit wiring used in residential/commercial buildings.**Parameters:** Basic hand tools, multimeter and related resources.**Note:** The student must have access to instruction from an individual with journeyman qualification when projects are hardwired to main power supply and for permanent usage.**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"> identify and describe various branch wiring systems used in residential and commercial applications 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> using the proper pictorial schematic, line diagram, ladder diagram, terminal connection and bill of materials to show how a branch wiring system is installed according to the Canadian Electrical Code (CEC). <p><i>Assessment Tool</i> <i>ELTLAB-1: Laboratory Practice, Parts 1 and 2</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	15
<ul style="list-style-type: none"> apply Canadian Electrical Code (CEC) standards to various branch wiring system designs 	<ul style="list-style-type: none"> installing and wiring an electrical system using the proper CEC codes for wiring: <ul style="list-style-type: none"> – receptacles – switching – lighting – wiring. <p><i>Assessment Tool</i> <i>ELTLAB-1: Laboratory Practice, Parts 2 and 3</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	15
<ul style="list-style-type: none"> wire a branch circuit for a residential application 	<ul style="list-style-type: none"> application of the CEC standards when constructing a branch circuit. <p><i>Assessment Tool</i> <i>ELTLAB-1: Laboratory Practice, Part 1</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	65

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Concept	Specific Outcomes	Notes
Fundamentals	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • use CEC standards in branch circuit design and installation • draw schematic and pictorial diagrams of branch circuit wiring • interpret architectural drawings regarding branch circuit wiring • identify various wiring systems, methods and materials; e.g.: <ul style="list-style-type: none"> – nonmetallic shielded cable (NMSC) – armoured cable (BX) – conduit and conductors – Teck cable – raceway systems – mineral insulated cable (Pyrotex) – wire mold. 	
System Identification	<ul style="list-style-type: none"> • compare series and parallel branch wiring circuits • identify live, grounding, grounded branch circuit conductors • measure voltage, current and continuity. 	Live – black (hot); grounded – white (neutral); grounding – green (bare).
Fabricating/Testing	<ul style="list-style-type: none"> • construct, according to CEC standards, the following branch circuits in NMSC: <ul style="list-style-type: none"> – standard receptacle – single location lamp switching – switch receptacle – range and/or dryer receptacle – split receptacle – multiple locations lamp switching – ground-fault interrupter (GFI) receptacle • construct, according to CEC standards, one of the above branch circuits using: <ul style="list-style-type: none"> – armoured cable – conduit raceway • install breakers and terminate branch circuit wiring in single-phase panel board. 	<p>Dimmer switch, lamp fixtures.</p> <p>Standard house panel including explanations of protection function.</p>

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Concept	Specific Outcomes	Notes
Real-world Applications	<i>The student should:</i> <ul style="list-style-type: none">• research requirements for obtaining an electrical permit.	
Careers	<ul style="list-style-type: none">• research Alberta apprenticeship related to electrical work• research Interprovincial and Master Certification• create and/or add information to an existing portfolio.	