

COURSE ELT2010: ELECTRO-ASSEMBLY 2**Level:** Intermediate**Theme:** Fabrication and Service Principles**Prerequisite:** ELT1010 Electro-assembly 1**Description:** Students apply electro-assembly technology to manufacture circuit boards.**Parameters:** Printed circuit fabrication kit and related resources.**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 appropriate construction methods to fabricate a circuit board • lay out and construct a simple electronic circuit board, using approved construction techniques • use a PC board and proper fabrication techniques to assemble a project 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • identifying and describing the three methods to prepare an electronic circuit board for etching. <p><i>Assessment Tool</i> <i>ELT2010-1: Presentations/Reports: Circuit Boards</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p> <ul style="list-style-type: none"> • identifying, designing and drawing the circuit board foil layout and constructing electronic circuit boards. <p><i>Assessment Tool</i> <i>ELTPAF: Project Assessment Form</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p> <ul style="list-style-type: none"> • cleaning, drilling, mounting, soldering components, applying protective coating to foil and assembling a printed circuit (PC) board project. <p><i>Assessment Tool</i> <i>ELTPAF: Project Assessment Form</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	<p>10</p> <p>35</p> <p>50</p>

COURSE ELT2010: ELECTRO-ASSEMBLY 2 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate established laboratory procedures and safe work practices demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observed performance in following: <ul style="list-style-type: none"> established laboratory procedures use and disposal of chemicals related to circuit board construction use of solder and fluxes. <p><i>Assessment Tool</i> <i>ELTPSP: Assessment Checklist: Laboratory Procedures and Safety Practices</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>5</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Safety/Resource Management	<p><i>The student should:</i></p> <ul style="list-style-type: none"> research illnesses caused by chemical, solder and flux used in prototype construction demonstrate appropriate safety techniques when using solder and chemicals for prototype construction identify and follow safe home/laboratory procedures while using solder, flux, photochemicals, cleaning chemicals and etching chemicals. 	Observe WHMIS regulations when using solder, flux chemicals, and PCB board materials.
Fundamentals	<ul style="list-style-type: none"> research the benefits and drawbacks of prototype construction assembly methods. 	List and explain the differences between various prototype assembly methods.

COURSE ELT2010: ELECTRO-ASSEMBLY 2 (continued)

Concept	Specific Outcomes	Notes
System Identification	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • use schematic symbols to represent electronic components • draw and/or modify schematic diagrams for a simple electronic circuit • match actual components to schematic symbols. 	<p>IEEE standards.</p> <p><i>Electronic workbench, project books/ magazines</i></p>
Designing and Prototyping	<ul style="list-style-type: none"> • prototype an electronic circuit on a breadboard • create the artwork circuit layout drawing for a printed circuit board • practise printed circuit board building and component installation. 	<p>Circuit on SK10 breadboard, matrix board with pins, wire wrap boards, nail and wood board, printed circuit board.</p>
Fabrication	<ul style="list-style-type: none"> • use an etch-resistance pen or photographic method to make a circuit board project. 	<p>Students to research circuit work required in other ELT courses; e.g.:</p> <ul style="list-style-type: none"> • Robotics courses • Communication Systems courses • Power Systems courses • Computer Logic Systems courses.
Problem Solving	<ul style="list-style-type: none"> • evaluate the circuit using electronic instruments • demonstrate how to troubleshoot an electronic circuit board. 	<p>Continuity check.</p>
Careers	<ul style="list-style-type: none"> • research employment opportunities in photographic and breadboard circuit design and construction • maintain a record of completed activities within a portfolio or create and/or add information to an existing portfolio. 	

