

COURSE ELT3010: ELECTRO-ASSEMBLY 3

Level:	Advanced
Theme:	Fabrication and Service Principles
Prerequisite:	ELT2010 Electro-assembly 2
Description:	Students apply photographic processes to construct a printed circuit for an electronic project.

Parameters: Photographic printed circuit board supplies, image product equipment 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 three photographic printed circuit (PC) board construction methods design or modify a board layout to be used for photographic PC board construction construct a PC board, using a photographic method 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> identifying and describing three methods to prepare an electronic circuit board for etching. <p><i>Assessment Tool</i> <i>ELT3010-1: Presentations/Reports: Printed Circuit Boards</i></p> <p><i>Standard</i> <i>Performance rating of 3 for each applicable task</i></p>	10
	<ul style="list-style-type: none"> identifying, designing and drawing a circuit board foil layout and constructing an electronic circuit board. <p><i>Assessment Tool</i> <i>ELTPAF: Project Assessment Form</i></p> <p><i>Standard</i> <i>Performance rating of 3 for each applicable task</i></p>	30
	<ul style="list-style-type: none"> identifying and constructing the circuit board foil layout by one of three photographic methods. <p><i>Assessment Tool</i> <i>ELTPAF: Project Assessment Form</i></p> <p><i>Standard</i> <i>Performance rating of 3 for each applicable task</i></p>	35

COURSE ELT3010: ELECTRO-ASSEMBLY 3 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • assemble a project, using a PC board • 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"> • identifying, components values and polarity to construct a circuit board project. <p><i>Assessment Tool</i> <i>ELTLAB-1: Laboratory Practice, Parts 3 and 4</i></p> <p><i>Standard</i> <i>Performance rating of 3 for each applicable task</i></p> <ul style="list-style-type: none"> • observed performance in following: <ul style="list-style-type: none"> – established laboratory procedures – chemical, solder, flux precautions for PC board construction. <p><i>Assessment Tool</i> <i>ELTPSP: Assessment Checklist: Laboratory Procedures and Safety Practices</i></p> <p><i>Standard</i> <i>Performance rating of 3 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>20</p> <p>5</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
<p>Safety/Resource Management</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe illness caused by chemical, solder and flux materials used in prototype construction • demonstrate appropriate safety techniques when using solder and chemicals for prototype construction • identify and follow safety procedures in home/laboratory while using solder, flux, photochemicals, cleaning chemicals and etching chemicals • use WHMIS data sheets. 	<p>Discuss the safe use of hazardous materials used in the production and assembly of PC boards.</p>

COURSE ELT3010: ELECTRO-ASSEMBLY 3 (continued)

Concept	Specific Outcomes	Notes
Fundamentals	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • research the benefits and drawbacks of various photographic construction methods • use schematic symbols to represent electronic components • match actual components to schematic symbols. 	List and explain the differences between various photographic prototype assembly methods; i.e., positive, negative, silk screening, toner transfer, computer.
System Application	<ul style="list-style-type: none"> • draw and/or modify schematic diagrams for an advanced electronic circuit. 	<i>Electronic Workbench, circuits, magazines, etc.</i>
Designing and Prototyping	<ul style="list-style-type: none"> • create the photographic artwork circuit layout for a PC board. 	
Fabricating/Testing	<ul style="list-style-type: none"> • use the circuit layout with one of the photographic methods to make a circuit board • demonstrate how to troubleshoot the fabricated electronic circuit board • use multimeter for voltage, current and resistance checks. 	Continuity check of copper strip.
Careers	<ul style="list-style-type: none"> • research employment opportunities in photographic and surface mount design, technology and construction. 	

