

COURSE ELT2110: SECURITY SYSTEMS 2**Level:** Intermediate**Theme:** Communication Systems**Prerequisite:** ELT1110 Security Systems 1**Description:** Students demonstrate the fundamentals of security technology used in homes, businesses and transportation systems.**Parameters:** Digital multimeter, soldering station, breadboard, power supply, hand tools and related resources.**Supporting Course:** ELT2080 Control Systems 2**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 elements of a security system 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> identification and description of the components of a security system and how they interface, such as: <ul style="list-style-type: none"> control panel detection device notification device. <p><i>Assessment Tool</i> <i>ELT2110–1: Presentations/Reports: Security Systems</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	10

COURSE ELT2110: SECURITY SYSTEMS 2 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • identify detection and notification devices • fabricate and operate a detection and notification alarm system for home or car use • demonstrate established laboratory procedures and safe work practices 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • identifying the following detection devices: <ul style="list-style-type: none"> – proximity switch – contact switch – vibration detector – glass breakage detector – photoelectric beam – ultrasonic motion detector – microwave motion detector – infrared motion detector – dual technology detector – various alarms using computer simulation and instruction, actual devices or experimental boards. <p><i>Assessment Tool</i> <i>ELT2110–1: Presentations/Reports: Security Systems</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p> <ul style="list-style-type: none"> • designing/fabricating and operating an electronic security system for personal use. <p><i>Assessment Tool</i> <i>ELTLAB–2: Assessment Checklist: Laboratory Practice, Part 2</i></p> <p><i>Standard</i> <i>Performance rating of 2 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 – voltage and current requirements of a security system – correct handling and charging batteries. <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>	<p>10</p> <p>75</p> <p>5</p>

COURSE ELT2110: SECURITY SYSTEMS 2 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</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>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 voltage and current hazards of security systems demonstrate correct handling of batteries used in security systems demonstrate how to recharge a battery safely. 	<p>If hardwired in a building, have unit inspected by journeyman.</p>
<p>Fundamentals</p>	<ul style="list-style-type: none"> explain terms such as: <ul style="list-style-type: none"> transceivers frequency microwave infrared radiation relays open and closed contact switches 	

COURSE ELT2110: SECURITY SYSTEMS 2 (continued)

Concept	Specific Outcomes	Notes
Fundamentals (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify and describe the following detection devices: <ul style="list-style-type: none"> – proximity switches – contact switches – vibration detector – glass breakage detector (foil strip) – photoelectric beam – ultrasonic motion detector – microwave motion detector – passive infrared motion detector – dual technology detectors – audio switch or sound discriminators • explain, experiment or connect various notification devices. 	<p>Use audio tapes of breaking glass to test “audio breaking glass detectors” (sound discriminators).</p>
System Identification	<ul style="list-style-type: none"> • identify the three basic elements of a security system: <ul style="list-style-type: none"> – control panel – detection devices – means of notification (alarm) • research the differences between two different security systems. 	<p>Tour an off-premise monitoring station of a local security company.</p>
Real-world Applications	<ul style="list-style-type: none"> • install, test and demonstrate an advanced security system incorporating a control panel, detectors, notification devices • explain the operation of various alarms (notification alarms): <ul style="list-style-type: none"> – identify who is notified by each type of alarm • research long-range security monitoring. 	<p>Advanced security systems can be purchased for \$150 to \$200.</p>

COURSE ELT2110: SECURITY SYSTEMS 2 (continued)

Concept	Specific Outcomes	Notes
Fabricating/Testing	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • design or construct an electronic security system for personal use • create a flowchart and block diagram to show detection, monitoring and alarm signals • write a technical report describing the security system. 	<p>These SOs are for the students to build a personal security system for home, car, etc. They will have to research, design, build and install a system, such as:</p> <ul style="list-style-type: none"> • computalarm • automotive burglar alarm • security alarm • antitheft alarm • tamper-proof alarm • motion-activated motorcycle alarm • blown fuse alarm • sun-powered alarm • freezer meltdown alarm • multiple alarm circuitry • photoelectric alarm system • semiconductor fail-safe alarm • one-chip burglar alarm • high power alarm driver • multi-loop parallel alarm • burglar chaser • heat or light-activated alarm • strobe alert system • exit delay for burglar alarm.
Careers	<ul style="list-style-type: none"> • identify careers in the security field • create and/or add information to an existing portfolio. 	

