

COURSE ELT2090: ANALOG COMMUNICATION 2**Level:** Intermediate**Theme:** Communication Systems**Prerequisite:** ELT1090 Analog Communication 1**Description:** Students demonstrate the fundamental concepts of electronic analog communication systems.**Parameters:** Oscilloscope, signal generator, transistor checker, multimeter, dB meter 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 characteristics of analog communication systems • explain analog communication technology through project design, construction, experimentation, circuit analysis and electronic component identification | <p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • using block diagram to explain the operation of a: <ul style="list-style-type: none"> – telephone – audio amplifier – intercom system – light and sound board – automotive sensor. <p><i>Assessment Tool</i> <i>ELT2090–1: Presentations/Reports: Analog Communication Systems</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p> <ul style="list-style-type: none"> • identification of the following electronic components: <ul style="list-style-type: none"> – diodes – transistors – field effect transistors (FET) – capacitors – resistors <p>using computer simulation, experimental boards, CAI package or actual devices</p> | <p>20</p> <p>75</p> |

COURSE ELT2090: ANALOG COMMUNICATION 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"> • analysis of the following electronic circuits: <ul style="list-style-type: none"> – crossover networks – small audio amplifiers – intercoms • using analog test instruments such as multimeters, oscilloscopes, transistor checker, signal generator, IB meters • prototyping mini circuits that demonstrate amplification, filters, crossover networks and transducers • troubleshooting and repairing or maintaining an analog communication system such as a: <ul style="list-style-type: none"> – portable stereo systems – cassette tape players • observed performance in the design and construction of an audio system project. <p><i>Assessment Tool</i> <i>ELTLAB–2: Assessment Checklist: Laboratory Practice, Parts 1, 2 and 3</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 – avoidance of dangers of excessive noise levels. <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></p> <p>5</p> <p>Integrated throughout</p> |

COURSE ELT2090: ANALOG COMMUNICATION 2 (continued)

| Concept | Specific Outcomes | Notes |
|----------------------------|--|--|
| Safety/Resource Management | <p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify and describe the difference between dBm and dB ratings of communications systems and the effects on human hearing. | Ear nerve damage resulting from excessive noise levels. |
| Fundamentals | <ul style="list-style-type: none"> • research the history of the beginnings of electrical communication • describe what is meant by an analog signal • explain how an electrical signal is turned into sound • identify various devices used to convert sound into electrical signals. | Reference: <i>Modern Electronic Communication</i> , p.4. |
| Applied Mathematics | <ul style="list-style-type: none"> • mathematically determine component values for crossover/band pass filters. | Speaker design. |
| System Identification | <ul style="list-style-type: none"> • draw and explain the block diagram of a simple communication model • identify the differences between wire and wireless telephone systems' technology and networking. | Speakers. Microphones. |
| Real-world Applications | <ul style="list-style-type: none"> • using a block diagram, explain the operation of the following forms of analog electronic communication systems: <ul style="list-style-type: none"> – telephone – audio amplifiers – intercom systems – light and sound boards – automotive sensors (analog). | Fuel/temperature/oil pressure gauges. |
| Fabricating/Testing | <ul style="list-style-type: none"> • build a small audio amplifier and/or intercom for personal student use • construct a speaker system with low-, mid- and high-range speakers with appropriate crossover networks such as an intercom system • test project using analog test instruments such as analog multimeter, oscilloscope. | |

COURSE ELT2090: ANALOG COMMUNICATION 2 (continued)

| Concept | Specific Outcomes | Notes |
|-----------------|--|-------|
| Problem Solving | <i>The student should:</i> <ul style="list-style-type: none">• troubleshoot, repair, maintain analog communication systems used in the home:<ul style="list-style-type: none">– portable stereo systems– cassette tape players. | |
| Careers | <ul style="list-style-type: none">• describe how an FM or AM radio station, TV station or theatre uses communication equipment. | |