

# 2005 CTS AMENDMENTS to the Electro-Technologies Guide to Standards and Implementation

## Summary of Curriculum Changes

Prerequisite changes:

- ELT3060: Digital Technology 3 is no longer a prerequisite to:
  - ELT3070: Digital Applications
- ELT3070: Digital Applications is no longer a prerequisite to:
  - ELT3080: Microprocessors

(ELT2060: Digital Technology 2 is the immediate prerequisite to both ELT3070: Digital Applications and ELT3080: Microprocessors.)

Section B

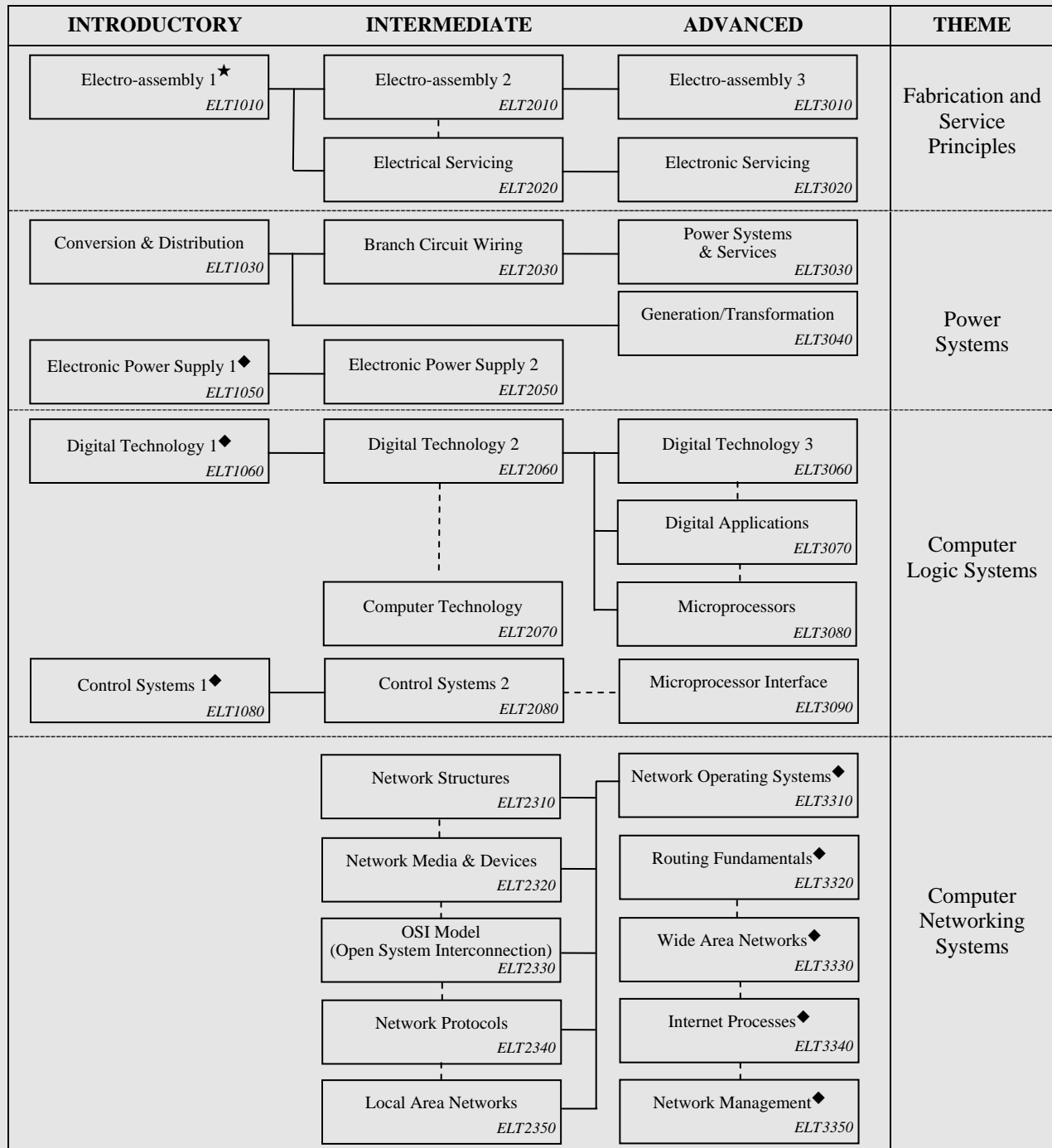
- **Remove** page B.5 (Revised 2004) and **replace** with new page B.5 (Revised 2005).

Section F

- **Remove** pages F.25 and F.29 (1997) and **replace** with new pages F.25 and F.29 (Revised 2005).

**SCOPE AND SEQUENCE**

**ELECTRO-TECHNOLOGIES**



(continued)

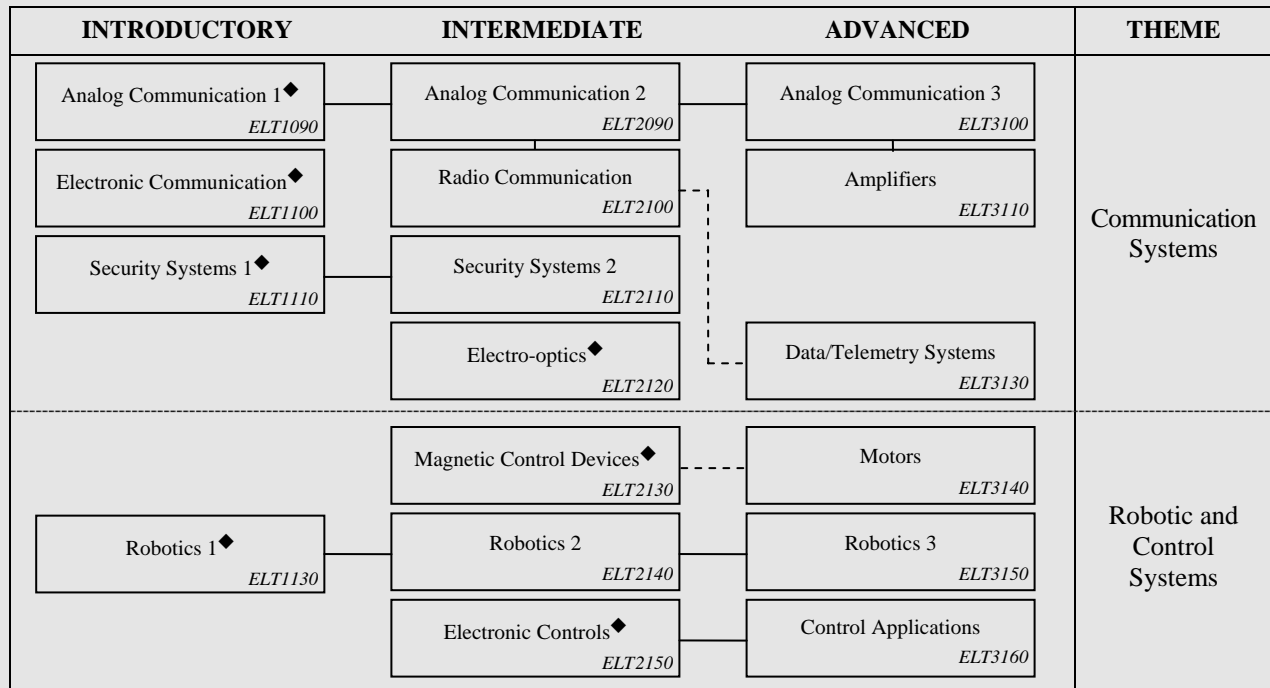
—— Prerequisite

----- Recommended sequence

★ Course provides a strong foundation for further learning in this strand.

◆ Refer to specific courses for additional prerequisites.

**SCOPE AND SEQUENCE (continued)**



Prerequisite
  Recommended sequence

★ Course provides a strong foundation for further learning in this strand.

♦ Refer to specific courses for additional prerequisites.

**COURSE ELT3070: DIGITAL APPLICATIONS****Level:** Advanced**Theme:** Computer Logic Systems**Prerequisite:** ELT2060 Digital Technology 2**Description:** Students experiment with large-scale and very large-scale integrated circuits, and demonstrate their applications to practical situations.**Parameters:** Logic probes, logic analyzer, signature analysis, oscilloscopes and related resources.**Supporting Course:** ELT3060 Digital Technology 3**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"> <li>• identify applications and develop prototypes of large-scale integrated circuits</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>• demonstrating correct handling and use of large-scale integrated circuits (LSICs). Prototyping and troubleshooting digital system such as:               <ul style="list-style-type: none"> <li>– microcomputer</li> <li>– liquid crystal display (LCD) timer with alarm</li> <li>– electronic game</li> <li>– digital voltmeter</li> <li>– digital light meter</li> </ul> </li> <li>• constructing circuits using LSICs incorporated within any video, stereo, audio or computer systems or advanced project of student choice</li> <li>• experimenting with a practical large digital integration (LDI) system such as:               <ul style="list-style-type: none"> <li>– clock</li> <li>– data transmission</li> <li>– video games.</li> </ul> </li> </ul> <p><i>Assessment Tool</i>  <i>ELTLAB–3: Assessment Checklist: Laboratory Practice, Parts 1 and 2</i></p> <p><i>Standard</i>  <i>Performance rating of 3 for each applicable task</i></p>	50

**COURSE ELT3070: DIGITAL TECHNOLOGY APPLICATION (continued)**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> <li>• troubleshoot a digital system or prototype with digital equipment</li> <li>• demonstrate established laboratory procedures and safe work practices</li> <li>• demonstrate basic competencies.</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>• incorporating a LSIC digital system on a given previous student project or a consumer product, using one of the following instruments to analyze and troubleshoot a circuit:               <ul style="list-style-type: none"> <li>– logic probes</li> <li>– pulser</li> <li>– logic analyzer</li> <li>– signature analyzer</li> <li>– oscilloscopes</li> </ul>               using computer simulation, experimental boards, CAI package or actual equipment.             </li> </ul> <p><i>Assessment Tool</i>  <i>ELTLAB-3: Assessment Checklist: Laboratory Practice, Part 3</i></p> <p><i>Standard</i>  <i>Performance rating of 3 for each applicable task</i></p> <ul style="list-style-type: none"> <li>• observed performance in following:               <ul style="list-style-type: none"> <li>– established laboratory procedures</li> <li>– correct handling and storage of LSIC and VLSIC chips.</li> </ul> </li> </ul> <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"> <li>• observations of individual effort and interpersonal interaction during the learning process.</li> </ul> <p><i>Assessment Tool</i>  <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>45</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"> <li>• demonstrate correct handling and storage of large integrated circuit (LSIC) and very large integrated circuit (VLSIC) chips.</li> </ul>	

**COURSE ELT3080: MICROPROCESSORS****Level:** Advanced**Theme:** Computer Logic Systems**Prerequisite:** ELT2060 Digital Technology 2**Description:** Students compare the internal architecture of microprocessors and program them, using instruction sets.**Parameters:** Microprocessor trainer/CAI program and related resources.**Supporting Courses:** ELT3060 Digital Technology 3  
ELT3070 Digital Applications**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"> <li>compare the internal architecture of various families of microprocessors</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>explaining the difference in internal architecture between different families of microprocessors</li> <li>identifying and comparing the following functional sections in a microprocessor: <ul style="list-style-type: none"> <li>– accumulator</li> <li>– program counter</li> <li>– instruction decoder</li> <li>– controller</li> <li>– data register</li> <li>– address register</li> <li>– stack pointer</li> <li>– index pointer</li> </ul> </li> <li>drawing a block diagram of an advanced microprocessor showing its internal architecture.</li> </ul> <p><i>Assessment Tool</i> <i>ELT3080–1: Presentations/Reports:</i> <i>Microprocessors</i></p> <p><i>Standard</i> <i>Performance rating of 3 for each applicable task</i></p>	20

**COURSE ELT3080: MICROPROCESSORS (continued)**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> <li>• program a microprocessor, using instruction sets</li> <li>• describe input/output operations in microprocessors</li> <li>• demonstrate established laboratory procedures and safe work practices</li> <li>• demonstrate basic competencies.</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>• writing and executing programs using mnemonic and op codes that complete the following functions:               <ul style="list-style-type: none"> <li>– branching</li> <li>– additions/subtractions</li> <li>– indexed and extended addressing</li> <li>– store data and retrieve data from the stack</li> <li>– loops</li> <li>– moving data between several places.</li> </ul> </li> </ul> <p><i>Assessment Tool</i>  <i>ELTLAB–3: Assessment Checklist: Laboratory Practice, Parts 1 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"> <li>• writing and executing various programs that use memory input and output devices.</li> </ul> <p><i>Assessment Tool</i>  <i>ELTLAB–3: Assessment Checklist: Laboratory Practice, Part 1</i></p> <p><i>Standard</i>  <i>Performance rating of 3 for each applicable task</i></p> <ul style="list-style-type: none"> <li>• observed performance in following:               <ul style="list-style-type: none"> <li>– established laboratory procedures</li> <li>– procedures to avoid hazard of static electricity</li> <li>– procedures indicating awareness of high voltage requirements.</li> </ul> </li> </ul> <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"> <li>• observations of individual effort and interpersonal interaction during the learning process.</li> </ul> <p><i>Assessment Tool</i>  <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>55</p> <p>20</p> <p>5</p> <p>Integrated throughout</p>