Engineering Technologies

Computer Engineering Technology

Credential: Associate in Applied Science

Degree in Computer Engineering Technology

A40160

The Computer Engineering Technology curriculum provides the skills required to install, service, and maintain computers, peripherals, networks, and microprocessor and computer controlled equipment. It includes training in both hardware and software, emphasizing operating systems concepts to provide a unified view of computer systems.

Coursework includes mathematics, physics, electronics, digital circuits, and programming with emphasis on the operation, use, and interfacing of memory and devices to the CPU. Additional topics may include communications, networks, operating systems, programming languages, Internet configuration and design, and industrial applications.

Graduates will qualify for employment opportunities in electronics technology, computer service, computer networks, server maintenance, programming, and other areas requiring a knowledge of electronic and computer systems. Graduates will also qualify for certification in electronics, computers, or networks.

Program Length: 5 semesters

Career Pathway Options: Associate of Applied Science Degree in Computer Engineering Technology

Program Sites: Lee Campus - Day

Course Requirements for Computer Engineering Technology Degree

I. General Education Academic Core (15 SHC) C-L-SHC

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 111 Writing and Inquiry</td>
<td>3-0-3</td>
</tr>
<tr>
<td>ENG 114 Professional Research and Reporting</td>
<td>3-0-3</td>
</tr>
<tr>
<td>MAT 121 Algebra/Trigonometry I</td>
<td>2-2-3</td>
</tr>
</tbody>
</table>

Humanities/Fine Arts Elective 3-0-3

Social/Behavioral Science Elective 3-0-3

II. Major Hours (59 SHC)

A. Technical Core (12 SHC)

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ELC 131 Circuit Analysis I</td>
<td>3-3-4</td>
</tr>
<tr>
<td>ELN 131 Analog Electronics I</td>
<td>3-3-4</td>
</tr>
<tr>
<td>ELN 133 Digital Electronics</td>
<td>3-3-4</td>
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B. Program Major (13 SHC)

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CET 111 Computer Upgrade/Repair I</td>
<td>2-3-3</td>
</tr>
<tr>
<td>ELN 232 Introduction to Microprocessors</td>
<td>3-3-4</td>
</tr>
<tr>
<td>NOS 110 Operating Systems Concepts</td>
<td>2-3-3</td>
</tr>
</tbody>
</table>

*Programming Elective 3

C. Other Major Hours Required (34 SHC)

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CET 211 Computer Upgrade/Repair II</td>
<td>2-3-3</td>
</tr>
<tr>
<td>CET 225 Digital Signal Processing</td>
<td>2-2-3</td>
</tr>
<tr>
<td>CIS 110 Introduction to Computers</td>
<td>2-2-3</td>
</tr>
</tbody>
</table>

Electronics Engineering Technology

Credential: Associate in Applied Science

Degree in Electronics Engineering Technology

A40200

This curriculum prepares individuals to become technicians who design, build, install, test, troubleshoot, repair, and modify developmental and production electronic components, equipment, and systems such as industrial/computer controls, manufacturing systems, telecommunication systems, and power electronic systems.

A broad-based core of courses, including basic electricity, solid-state fundamentals, digital concepts and microprocessors ensures the student will master the competencies necessary to perform entry-level tasks. Emphasis is placed on developing the student’s ability to think, analyze, and troubleshoot.

Graduates will qualify for employment as engineering technicians or electronic technicians with job titles including electronic engineering associate, electronic engineering technician, field service technician, maintenance technician, electronic tester, electronic systems integrator, bench technician, and production control technician.
Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science
Degree in Electronics Engineering Technology
Program Sites: Lee Campus - Day Program

Course Requirements for Electronics Engineering Technology Degree

I. General Education Academic Core (15 SHC)  C-L-SHC
ENG 111  Writing and Inquiry  3-0-3
ENG 114  Professional Research and Reporting  3-0-3
MAT 121  Algebra/Trigonometry I  2-2-3
Humans/Arts Elective  3-0-3
Social/Behavioral Science Elective  3-0-3

II. Major Hours (58 SHC)
A. Technical Core (12 SHC)
ELC 131  Circuit Analysis I  3-3-4
ELN 131  Analog Electronics I  3-3-4
ELN 133  Digital Electronics  3-3-4

B. Program Major (12 SHC)
ELN 132  Analog Electronics II  3-3-4
ELN 232  Introduction to Microprocessors  3-3-4
ELN 234  Communication Systems  3-3-4

C. Other Major Hours (34 SHC)
CET 225  Digital Signal Processing  2-2-3
CIS 110  Introduction to Computers  2-2-3
EGR 131  Introduction to Electronics Technology  1-2-2
ELC 131A  Circuit Analysis I Lab  0-3-1
ELN 247  Electronic Applications Project  1-3-2
ELN 275  Troubleshooting  1-3-2
ISC 221  Statistical Quality Control  3-0-3
MAT 122  Algebra/Trigonometry II  2-2-3
PCI 170  DAQ and Control  3-3-4
PHY 131  Physics - Mechanics  3-2-4
PHY 133  Physics-Sound and Light  3-2-4
Major Elective  3

III. Other Required Hours (1 SHC)
Choose one course:
ACA 111  College Student Success  1-0-1
ACA 115  Success and Study Skills  0-2-1
ACA 122  College Transfer Success  1-0-1

Major Elective Course Listing (Select 3 SHC)
CET 111  Computer Upgrade/Repair I  2-3-3
CSC 134  C++ Programming  2-3-3
CSC 151  JAVA Programming  2-3-3
DFT 151  CAD I  2-3-3
ELC 128  Introduction to PLCs  2-3-3
ELC 213  Instrumentation  3-2-4
ELN 236  Fiber Optics and Lasers  3-2-4
NET 110  Networking Concepts  2-2-3
NOS 110  Operating Systems Concepts  2-3-3

Total Semester Hours Credit Required for Graduation: 74

Electronics Engineering Technology
Credential: Certificate in Electronics Technology
C40200

This curriculum prepares individuals to work as skilled assemblers, inspectors, or testers in consumer or industrial electronics environments. Work tasks include mounting, soldering, and wiring of electronics components, assembling sub-units, and final assembly and inspection of complete systems. Coursework includes basic electricity, mathematics, solid-state electronics, and basic assembly skills. Graduates should qualify for employment as an electronics assembler, electronics tester, or electronics inspector.

Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science
Degree in Electronics Engineering Technology, Certificate in Electronics Technology
Program Sites:
Lee Campus - Day Program
Harnett Campus – Day Program

Course Requirements for Electronics Technology Certificate

I. General Education Academic Core (3 SHC)  C-L-SHC
MAT 121  Algebra/Trigonometry I  2-2-3

II. Major Hours (15 SHC)
A. Technical Core (8 SHC)
ELC 131  Circuit Analysis I  3-3-4
ELN 131  Analog Electronics I  3-3-4

B. Program Major (4 SHC)
ELN 132  Analog Electronics II  3-3-4
ELN 232  Introduction to Microprocessors  3-3-4

C. Other Major Hours Required for Graduation (3 SHC)
EGR 131  Introduction To Electronics Technology  1-2-2
ELC 131A  Circuit Analysis I Lab  0-3-1

Total Semester Hours Credit Required for Graduation: 18

Laser and Photonics Technology
Credential: Associate in Applied Science
Degree in Laser and Photonics Technology
A40280

The Laser and Photonics Technology curriculum is designed to develop the practical knowledge and skills required to be a successful technician in business and industry. Coursework includes mathematics, science, communication, electronics and optics courses. An in-depth sequence of laboratory learning experiences develops the hands-on skills needed for specifying, operating and maintaining laser and photonics-based systems.
Current and emerging job opportunities exist in the areas of fiber optic communications, materials processing, laser surgery, research and a variety of related areas. Program graduates often begin work as technicians in product testing, field service, product development or sales.

Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science in Laser and Photonics Technology
Program Sites: Harnett Campus - Day Program

Course Requirements for Laser and Photonics Technology Degree

I. General Education Academic Core (15 SHC) C-L-SHC
ENG 111 Writing and Inquiry 3-0-3
ENG 114 Professional Research and Reporting 3-0-3
MAT 121 Algebra/Trigonometry I 2-2-3
MAT 122 Algebra/Trigonometry II 2-2-3
HUM 111 Humanities/Fine Arts Elective 3-0-3
HUM 115 Social/Behavioral Science Elective 3-0-3

II. Major Hours (59 SHC)
A. Core (12 SHC)
ELC 131 Circuit Analysis I 3-3-4
ELN 131 Analog Electronics I 3-3-4
ELN 133 Digital Electronics 3-3-4

B. Program Major (13 SHC)
LEO 111 Lasers and Applications 1-3-2
LEO 211 Photonics Technology 5-6-7
LEO 212 Photonics Applications 3-3-4

C. Other Major Hours Required for Graduation (34 SHC)
CIS 110 Introduction to Computers 2-2-3
EGR 131 Introduction to Electronics Tech. 1-2-2
ELC 127 Software for Technicians 1-3-2
ELC 131A Circuit Analysis I Lab 0-3-1
ELN 132 Analog Electronics II 3-3-4
ELN 232 Intro to Microprocessors 3-3-4
ELN 275 Troubleshooting 1-3-2
ISC 221 Statistical Quality Control 3-0-3
LEO 213 Advanced Photonics Applications 3-3-4
MAT 122 Algebra/Trigonometry II 2-2-3
PHY 131 Physics - Mechanics 3-2-4
Technical Elective 2

III. Other Required Hours (1 SHC)
Choose one course:
ACA 111 College Student Success 1-0-1
ACA 115 Success and Study Skills 0-2-1
ACA 122 College Transfer Success 1-0-1

Technical Electives
WBL 111 Work-Based Learning I 0-10-1
WBL 121 Work-Based Learning II 0-10-1
WBL 122 Work-Based Learning II 0-20-2
LEO 222 Photonics Applications Project 1-3-2

Total Semester Hours Required for Graduation: 75

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**Sustainability Technologies**

**Credential:** Associate in Applied Science

**Degree in Sustainability Technologies A40370**

The Sustainability Technologies curriculum is designed to prepare individuals for employment in environmental, construction, alternative energy, manufacturing, or related industries, where key emphasis is placed on energy production and waste reduction along with sustainable technologies.

Course work may include alternative energy, environmental engineering technology, sustainable manufacturing and green building technology. Additional topics may include sustainability, energy management, waste reduction, renewable energy, site assessment, and environmental responsibility.

Graduates should qualify for positions within the alternative energy, construction, environmental, and/or manufacturing industries. Employment opportunities exist in both the government and private industry sectors where graduates may function as manufacturing technicians, sustainability consultants, environmental technicians, or green building supervisors.

Program Length: 4 semesters
Career Pathway Options: Associate in Applied Science in Sustainability Technologies
Program sites: Pittsboro Campus

Course Requirements for Sustainability Technologies Degree

A. General Education Courses (15 SHC) C-L-SHC
ENG 111 Writing and Inquiry 3-0-3
*ENG 114 Professional Research and Reporting 3-0-3
HUM 111 Humanities/Fine Arts Elective 3-0-3
**MAT 121 Algebra/Trigonometry I 2-2-3
MAT 122 Algebra/Trigonometry II 2-2-3
PHYS 131 Physics - Mechanics 3-2-4

*Students may substitute ENG 113.
**Students may substitute MAT 171

B. Required Major Core Courses (12 SHC)
BIO 140 Environmental Biology 3-0-3
BIO 140A Environmental Biology Lab 0-3-1
- or-
ENV 110 Environmental Science 3-0-3
SST 110 Intro to Sustainability 3-0-3
SST 120 Energy Use Analysis 2-2-3
SST 210 Issues in Sustainability 3-0-3