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 Main Campus - Day

Course Requirements for Computer Engineering Technology Degree

I. General Education Requirements (15 SHC) C-L-SHC
ENG 111 Writing and Inquiry 3-0-3
MAT 121 Algebra/Trigonometry I 2-2-3
Humanities/Fine Arts Elective 3-0-3
Social/Behavioral Science Elective 3-0-3
Communications; Take one course
ENG 112 Writing/Research in the Disciplines 3-0-3
ENG 114 Professional Research and Reporting 3-0-3
COM 231 Public Speaking 3-0-3

2. Major Requirements (25 SHC)
ELC 131 Circuit Analysis I 3-3-4
ELN 131 Analog Electronics I 3-3-4
ELN 133 Digital Electronics 3-3-4
CTS 120 Hardware/Software Support 2-2-3
ELN 232 Introduction to Microprocessors 3-3-4
NOS 130 Windows Single User 2-2-3
Programming Elective; Take one course:
CSC 134 C++ Programming 2-3-3
CSC 139 Visual BASIC Programming 2-3-3
CSC 151 JAVA Programming 2-3-3

III. Other Major Requirements (31 SHC)
CET 225 Digital Signal Processing 2-2-3
CTI 120 Network and SEC Foundation 2-2-3
CTS 220 Adv. Hardware Software Support 2-3-3
EGR 131 Intro to Electronics Tech 1-2-2
ELC 131A Circuit Analysis I Lab 0-3-1
ELN 132 Analog Electronics II 3-3-4
ELN 275 Troubleshooting 1-2-2
MAT 122 Algebra/Trigonometry 2-2-3
PCI 170 DAQ and Control 3-3-4
PHY 131 Physics: Mechanics 3-2-4
Technical Elective; Take one course:
CIS 110 Introduction to Computers 2-2-3
CSC 134 C++ Programming 2-3-3
CSC 139 Visual BASIC Programming 2-3-3
CSC 151 JAVA Programming 2-3-3
ELN 234 Communication Systems 3-3-4
ELN 247 Electronics Application Project 1-3-2
NET 125 Networking Basics 1-4-3
NET 126 Routing Basics 1-4-3
NOS 120 Linux/UNIX Single User 2-2-3
NOS 130 Windows Single User 2-2-3

4. Other Requirements (1 SHC)
Take 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

Total Semester Hours Credit Required for Graduation: 72

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 assistants 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 Main Campus - Day Program

Course Requirements for Electronics Engineering Technology Degree

1. General Education Requirements (15 SHC)  C-L-SHC
- ENG 111 Writing and Inquiry 3-0-3
- MAT 121 Algebra/Trigonometry I 2-2-3
- Humanities/Fine Arts Elective 3-0-3
- Social/Behavioral Science Elective 3-0-3
- Communications; Take one course:
  - ENG 112 Writing/Research in the Disciplines 3-0-3
  - ENG 114 Professional Research and Reporting 3-0-3
  - COM 231 Public Speaking 3-0-3

2. Major Requirements (24 SHC)
- ELC 131 Circuit Analysis I 3-3-4
- ELN 131 Analog Electronics I 3-3-4
- ELN 133 Digital Electronics 3-3-4
- ELN 132 Analog Electronics II 3-3-4
- ELN 232 Introduction to Microprocessors 3-3-4
- ELN 234 Communication Systems 3-3-4

3. Other Major Requirements (34 SHC)
- CET 225 Digital Signal Processing 2-2-3
- CIS 110 Introduction to Computers 2-2-3
- EGR 131 Introduction to Electronics Tech. 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
- Technical Elective; Take 3 SHC: 3
- CSC 134 C++ Programming 2-3-3
- CSC 151 JAVA Programming 2-3-3
- CTI 120 Network and SEC Foundations 2-2-3
- CTS 120 Hardware/Software Support 2-3-3
- DFT 151 CAD I 2-3-3
- ELC 128 Introduction to PLCs 2-3-3
- LEO 111 Lasers and Applications 1-3-2
- NOS 130 Windows Single User 2-2-3

4. Other Required Hours (1 SHC)
- Take 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

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 Main Campus - Day Program; Harnett Main Campus - Day Program

Course Requirements for Electronics Technology Certificate

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

2. Major Requirements (12 SHC)
- ELC 131 Circuit Analysis I 3-3-4
- ELN 131 Analog Electronics I 3-3-4
- ELN 132 Analog Electronics II 3-3-4

3. Other Major Requirements (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 Main Campus - Day Program

Course Requirements for Laser and Photonics Technology Degree

1. General Education Requirements (15 SHC)  C-L-SHC
ENG 111  Writing and Inquiry  3-0-3
MAT 121  Algebra/Trigonometry I  2-2-3
Humanities/Fine Arts Elective  3-0-3
Social/Behavioral Science Elective  3-0-3
Communication; Take one course:
ENG 112  Writing/Research in the Disciplines  3-0-3
ENG 114  Professional Research and Reporting  3-0-3
COM 231  Public Speaking  3-0-3

2. Major Requirements (25 SHC)
ELC 131  Circuit Analysis I  3-3-4
ELN 131  Analog Electronics I  3-3-4
ELN 133  Digital Electronics  3-3-4
LEO 111  Lasers and Applications  1-3-2
LEO 211  Photonics Technology  5-6-7
LEO 212  Photonics Applications  3-3-4

3. Other Major Requirements (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, take 2 SHC from:
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

4. Other Requirements (1 SHC)
Take 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

Total Semester Hours Credit Required for Graduation: 75

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: 5 semesters
Career Pathway Options: Associate in Applied Science in Sustainability Technologies
Program sites: Chatham Main Campus

Course Requirements for Sustainability Technologies Degree

1. General Education Requirements (15 SHC)  C-L-SHC
ENG 111  Writing and Inquiry  3-0-3
Humanities/Fine Arts Elective  3-0-3
Social/Behavioral Science Elective  3-0-3
Communications, take 3 SHC from:
ENG 112  Writing/Research in the Disciplines  3-0-3
ENG 114  Professional Research and Reporting  3-0-3
COM 110  Introduction to Communication  3-0-3
Mathematics; Take one course:
MAT 121  Algebra/Trigonometry I  2-2-3
MAT 171  PreCalculus Algebra  3-2-4

2. Major Requirements (12 SHC)
BIO 140  Environmental Biology  3-0-3
BIO 140A  Environmental Biology Lab  0-3-1
SST 110  Intro to Sustainability  3-0-3
SST 120  Energy Use Analysis  2-2-3
SST 210  Issues in Sustainability  3-0-3

3. Concentration Requirements (12 SHC)
ALT 120  Renewable Energy Tech  2-2-3
ALT 250  Thermal Systems  2-2-3
ELC 220  Photovoltaic Systems Tech  2-2-3