Computer Engineering Technology

The AAS degree in Computer Engineering Technology is accepted at some colleges and universities as the first two years of a bachelor's-level engineering technology program. This program has been designed to include training in hardware and software, emphasizing operating system concepts to provide a unified view of computer systems.

Computer Engineering Technology focuses on the circuitry of computers and some programming. Beginning with electrical fundamentals, course work progressively introduces electronics, circuit simulation, solid-state fundamentals, digital concepts, instrumentation, C++ programming, microprocessors, microcomputer applications, networking, operating systems, I/O hardware interfacing, industrial applications, and data acquisition using LabView. Other course work includes the study of various fields associated with the electrical/electronic industry. Several opportunities for industry certifications are built into the program, allowing students to add skills to their resumes. Graduates should qualify for employment opportunities in electronics technology, computer service, computer networks, server maintenance, programming, and other areas requiring knowledge of electronic and computer systems.

The Computer Engineering Technology curriculum provides the skills required to design and implement microprocessors and computer-controlled equipment. Graduates should qualify for employment as engineering assistants or either computer, electrical, or electronic technicians with job titles such as electronics engineering technician, field service technician, maintenance technician, communications technician, electronic tester, electronic systems integrator, electronics and instrumentation technician, control technician, bench technician, electromechanical equipment assemblers, electronics and instrumentation technician, computer network support specialists, computer user support specialists, electronic home entertainment equipment installers and repairers.

The AAS degree in Computer Engineering Technology is accepted at some colleges and universities as the first two years of a bachelor's-level engineering technology program. Graduates can transfer to a university program to finish a bachelor's degree; however, there will be deficiencies.

Information on the Computer Engineering Technology program is available on the Computer Engineering Technology website.

For specific information about potential positions and wages in computer engineering technology employment, visit the Central Piedmont Career Coach website.

Computer Engineering Technology (A40160)

Degree Awarded

The Associate in Applied Science Degree - Computer Engineering Technology is awarded by the college upon completing the program.

The AAS degree in Computer Engineering Technology is accepted at some colleges and universities as the first two years of a 4-year bachelor's-level engineering technology program.

Program Accreditation

The Computer Engineering Technology program at Central Piedmont is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board of Engineering and Technology (TAC of ABET), abet.org.

How to Apply

Complete a Central Piedmont admissions application through Get Started **on the Central Piedmont website.**

Contact Information

The Computer Engineering Technology program is in the Engineering Technology Division. For additional information, visit the Computer Engineering Technology website or the Program Chair at 704.330.6773.

General Education Requirements		
ENG 111	Writing and Inquiry	3.0
Select 1 of the following:		3.0
ENG 112	Writing and Research in the Disciplines	
or ENG 113	Literature-Based Research	
or ENG 114	Professional Research & Reporting	
Select 1 of the following:		3.0
COM 110	Introduction to Communication	
or COM 231	Public Speaking	
MAT 171	Precalculus Algebra	4.0
Select 1 of the following:		3.0
ECO 251	Principles of Microeconomics	
or ECO 252	Principles of Macroeconomics	
or HIS 111	World Civilizations I	
or HIS 112	World Civilizations II	
or HIS 131	American History I	
or HIS 132	American History II	
or POL 120	American Government	
or PSY 150	General Psychology	
or SOC 210	Introduction to Sociology	
Select 1 of the following:		3.0
ART 111	Art Appreciation	
or ART 114	Art History Survey I	
or ART 115	Art History Survey II	
or DRA 111	Theatre Appreciation	
or HUM 120	Cultural Studies	
or HUM 130	Myth in Human Culture	
or MUS 110	Music Appreciation	
or MUS 112	Introduction to Jazz	
or PHI 215	Philosophical Issues	
or PHI 240	Introduction to Ethics	
or REL 110	World Religions	
Major Requirements		
CTI 130	Operating Systems and Device Foundation	6.0
ELN 131	Analog Electronics I	4.0
ELN 133	Digital Electronics	4.0
ELN 232	Introduction to Microprocessors	4.0
ELN 260	Prog Logic Controllers	4.0
Select 1 of the following two groups:		4.0

Group 1:		
ELC 131	Circuit Analysis I	
Group 2:		
ELC 138	DC Circuit Analysis	
ELC 139	AC Circuit Analysis	
Other Major Requirements:		
MAT 172	Precalculus Trigonometry	4.0
CSC 134	C++ Programming	3.0
CTI 120	Network and Security Foundation	3.0
SEC 110	Security Concepts	3.0
ELC 133	Circuit Analysis II	4.0
ELC 135	Electrical Machines	3.0
EGR 110	Introduction to Engineering Technology	2.0
Select 1 of the following:		4.0
PHY 151	College Physics I	
PHY 251	General Physics I (Students must meet the prerequisite of MAT 271.)	
Total Credits		71

No diplomas are offered in Computer Engineering Technology.

No certificates are offered in Computer Engineering Technology.

The following is the suggested plan for when to take each course to complete the Associate in Applied Science degree, based on the program requirements of the 2022-2023 catalog. This is only a recommendation — you may take courses in another order upon consultation with your advisor. This plan is based on you starting with college-level math and English courses, starting your program in the fall, and attending full-time. You can also follow this sequence if you attend part-time. Speak with an advisor about the plan and any questions. This program might also offer diplomas or certificates; visit the catalog or contact the program for details.

Computer Engineering Technology suggested course sequence

CSC 134. C++ Programming. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces computer programming using the C++ programming language with object-oriented programming principles. Emphasis is placed on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level.
Prerequisites: Take EFL 112 ENG 111 ENG 112 ENG 113 or ENG 114; Minimum; grade C. Take 1 group: Take DMA 010 DMA 020 DMA 030 DMA 040 DMA 050; Take MAT 121, minimum grade of of C; Take MAT 171, minimum grade of of C; Take DMA 025 DMA 040 DMA 050; Take DMA 025 DMA 045; Take DMA 010 DMA 020 DMA 030 DMA 045; Take MAT 003; Take BSP 4003

CTI 130. Operating Systems and Device Foundation. 6.0 Credits.
Class-4.0. Clinical-0.0. Lab-4.0. Work-0.0
This course covers the basic hardware and software of a personal computer, including installation, operations and interaction with popular microcomputer operating systems. Topics include components identification, memory-system, peripheral installation and configuration, preventive maintenance, hardware diagnostics/repair, installation and optimization of system software, commercial programs, system configuration, and device-drivers. Upon completion, students should be able to select appropriate computer equipment and software, upgrade/maintain existing equipment and software, and troubleshoot/repair non-functioning personal computers.
Prerequisites: Take 1 group: Take DMA 010 DMA 020 DMA 030 DMA 040 DMA 050; Take MAT 003. Take 1 group: Take DRE 097 DRE 098; Take ENG 002

EGR 110. Introduction to Engineering Technology. 2.0 Credits.
Class-1.0. Clinical-0.0. Lab-2.0. Work-0.0
This course introduces general topics relevant to engineering technology. Topics include career assessment, professional ethics, critical thinking and problem solving, usage of college resources for study and research, and using tools for engineering computations. Upon completion, students should be able to choose a career option in engineering technology and utilize college resources to meet their educational goals.

ELC 131. Circuit Analysis I. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces DC and AC electricity with an emphasis on circuit analysis, measurements, and operation of test equipment. Topics include DC and AC principles, circuit analysis laws and theorems, components, test equipment operation, circuit simulation, and other related topics. Upon completion, students should be able to interpret circuit schematics; design, construct, verify, and analyze DC/AC circuits; and properly use test equipment.
Corequisites: Take MAT 121 or MAT 171

ELC 133. Circuit Analysis II. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course covers additional concepts of DC/AC electricity, the use of test equipment, and measurement techniques. Topics include the application of network theorems such as delta/wye transformations, Superposition Theorem, and other advanced circuit analysis principles. Upon completion, students should be able to construct and analyze DC/AC circuits used advanced circuit analysis theorems, circuit simulators, and test equipment.
Prerequisites: Take ELC 131, minimum grade of C

ELC 138. DC Circuit Analysis. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces DC electricity with an emphasis on circuit analysis, measurements, and operation of test equipment. Topics include DC principles, circuit analysis laws and theorems, components, test equipment operation, circuit simulation, and other related topics. Upon completion, students should be able to interpret circuit schematics; design, construct, and analyze DC circuits; and properly use test equipment.

ELC 139. AC Circuit Analysis. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces AC electricity with an emphasis on circuit analysis, measurements, and operation of test equipment. Topics include AC voltages, circuit analysis laws and theorems, reactive components and circuits, transformers, test equipment operation, circuit simulation, and other related topics. Upon completion, students should be able to interpret AC circuit schematics; analyze and troubleshoot AC circuits; and properly use test equipment.
Prerequisites: Take ELC 138

ELN 131. Analog Electronics I. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces the characteristics and applications of semiconductor devices and circuits. Emphasis is placed on analysis, selection, biasing, and applications. Upon completion, students should be able to construct, analyze, verify, and troubleshoot analog circuits using appropriate techniques and test equipment.
Prerequisites: Take ELC 131, minimum grade of C

ELN 133. Digital Electronics. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course covers combinational and sequential logic circuits. Topics include number systems, Boolean algebra, logic families, medium scale integration (MSI) and large scale integration (LSI) circuits, analog to digital (AD) and digital to analog (DA) conversion, and other related topics. Upon completion, students should be able to construct, analyze, verify, and troubleshoot digital circuits using appropriate techniques and test equipment.

ELC 135. Electrical Machines. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
This course covers magnetic circuits, transformers, DC/AC machines, and the three-phase circuit fundamentals including power factor. Topics include magnetic terms and calculations, transformer calculations based on primary or secondary equivalent circuits, and regulation and efficiency calculations. Upon completion, students should be able to perform regulation and efficiency calculations for DC/AC machine circuits.
Prerequisites: Take ELC 139 or ELC 131, minimum grade of C

ELN 232. Introduction to Microprocessors. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course introduces microprocessor architecture and microcomputer systems including memory and input/output interfacing. Topics include low-level language programming, bus architecture, I/O systems, memory systems, interrupts, and other related topics. Upon completion, students should be able to interpret, analyze, verify, and troubleshoot fundamental microprocessor circuits and programs using appropriate techniques and test equipment.
Prerequisites: Take ELN 133, minimum grade of C

ELN 260. Prog Logic Controllers. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0
This course provides a detailed study of PLC applications, with a focus on design of industrial controls using the PLC. Topics include PLC components, memory organization, math instructions, documentation, input/output devices, and applying PLCs in industrial control systems. Upon completion, students should be able to select and program a PLC system to perform a wide variety of industrial control functions.
Prerequisites: Take ELC 213 or ELN 133 with a minimum grade C

NET 125. Introduction to Networks. 3.0 Credits. Class-1.0. Clinical-0.0. Lab-4.0. Work-0.0
This course introduces the architecture, structure, functions, components, and models of the Internet and computer networks. Topics include introduction to the principles of IP addressing and fundamentals of Ethernet concepts, media, and operations. Upon completion, students should be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.

NET 126. Switching and Routing. 3.0 Credits. Class-1.0. Clinical-0.0. Lab-4.0. Work-0.0
This course covers the architecture, components, and operations of routers and switches in small networks and introduces wireless local area networks (WLAN) and security concepts. Emphasis is placed on configuring and troubleshooting routers and switches for advanced functionality using security best practices and resolving common network issues utilizing both IPv4 and IPv6 protocols. Upon completion, students should be able to configure VLANs and Inter-VLAN routing applying security best practices, troubleshoot inter-VLAN routing on Layer 3 devices, configure redundancy on a switched network using STP and EtherChannel, configure WLANs using a WLC and L2 security best practices and configure IPv4 and IPv6 static routing on routers.
Prerequisites: Take NET 125, minimum grade of C