



Computer Engineering Technology Credential: Associate in Applied Science Degree in Computer Engineering Technology A4016000

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.

Course work 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 should 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 may 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

A. General Education (16 SHC)

ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 114	Prof. Research and Reporting	3-0-3
MAT 121	Algebra/Trigonometry I	2-2-3
	Humanities Elective	3-0-3
	Social Science Elective	3-0-3

B. Required Major Core Courses (30 SHC)

CET 111	Computer Upgrade/Repair I	2-3-3
ELC 131	DC/AC Circuit Analysis	4-3-5
ELN 131	Electronic Devices	3-3-4
ELN 133	Digital Electronics	3-3-4
ELN 232	Intro to Microprocessors	3-3-4
MAT 122	Algebra/Trigonometry	2-2-3
PHY 131	Physics: Mechanics	3-2-4

Required Subject Area

CSC 134	C++ Programming	2-3-3
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C. Other Major Hours Required for Graduation (27 SHC)

CIS 110	Intro to Computers	2-2-3
CET 211	Computer Upgrade/Repair II	2-3-3
CIS 147	Operating Sys./Windows	2-2-3
ELN 233	Microprocessor Systems	3-3-4
ELN 275	Troubleshooting	1-2-2
NET 110	Data Commun./Networking	2-2-3
	* Technical Electives	9

*Technical Electives may be selected from the following courses: (9 SHC)

(A maximum of 3 SHC electives may be CIS; a maximum of 6 SHC electives may be NET.)

CET 225	Digital Signal Processing	2-2-3
CIS 130	Survey of Operating Sys.	2-3-3
CIS 148	OS - Windows NT	2-2-3
CIS 152	Database Concepts & Apps	2-2-3
CIS 172	Intro to the Internet	2-3-3
CIS 173	Network Theory	2-2-3
CIS 174	Network Systems Manager I	2-2-3
CSC 133	C Programming	2-3-3
CSC 139	Visual BASIC Progr.	2-3-3
CSC 143	Object-Oriented Progr.	2-3-3
CSC 148	JAVA Programming	2-3-3
CSC 160	Intro to Internet Progr.	2-2-3
ELN 247	Electronics Application Proj.	1-3-2
NET 125	Routing & Switching I	1-4-3
NET 126	Routing & Switching II	1-4-3
NET 260	Internet Dev & Support	3-0-3

Total Semester Hours Credit in Program 73

Semester Curriculum for Computer Engineering Technology Degree

1st Semester (Fall)		C-L-SHC
CIS 110	Introduction to Computers	2-2-3
NET 110	Data Comm/Networking	2-2-3
ELC 131	DC/AC Circuit Analysis	4-3-5
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
MAT 121	Algebra/Trigonometry I	2-2-3
		13-11-18

2nd Semester (Spring)		
CIS 147	OS - Windows	2-2-3
ELN 131	Electronic Devices	3-3-4
ELN 133	Digital Electronics	3-3-4
MAT 122	Algebra/Trigonometry II	2-2-3
PHY 131	Physics-Mechanics	3-2-4
		13-12-18

3rd Semester (Summer)		
CSC 134	C++ Programming	2-3-3
ENG 114	Prof. Research and Reporting	3-0-3
		5-3-6

4th Semester (Fall)		
CET 111	Computer Upgrade/Repair I	2-3-3
ELN 232	Intro. to Microprocessors	3-3-4
	Social Science Elective	3-0-3
	Technical Elective	3
	Technical Elective	3
		12-12-16

5th Semester (Spring)		
ELN 275	Troubleshooting	1-2-2
ELN 233	Microprocessor Systems	3-3-4
CET 211	Computer Upgrade/Repair II	2-3-3
	Humanities Elective	3-0-3
	Technical Elective	<u>3</u>
		11-10-15

Total Semester Hours Credit: 73

CET 111 Computer Upgrade/Repair I 2-3-3

This course is the first of two courses covering repairing, servicing, and upgrading computers and peripherals in preparation for industry certification. Topics include safety practices, CPU/memory/bus identification, disk subsystem, hardware/software installation/configuration, common device drivers, data recovery, system maintenance, and other related topics. Upon completion, students should be able to safely repair and/or upgrade computer systems to perform within specifications.

CET 211 Computer Upgrade/Repair II 2-3-3

Prerequisites: CET 111

This course is the second of two courses covering repairing, servicing, and upgrading computers and peripherals in preparation for industry certification. Topics include resolving resource conflicts and system bus specifications, configuration and troubleshooting peripherals, operating system configuration and optimization, and other related topics. Upon completion, students should be able to identify and resolve system conflicts and optimize system performance.

CIS 110 Intro to Computers 2-2-3

This course provides an introduction to computers and computing. Topics include the impact of computers on society, ethical issues, and hardware/software applications, including spreadsheets, databases, word processors, graphics, the Internet, and operating systems. Upon completion, students should be able to demonstrate an understanding of the role and function of computers and use the computer to solve problems. *This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences/mathematics.*

CIS 111 Basic PC Literacy 1-2-2

This course provides a brief overview of computer concepts. Emphasis is placed on the use of personal computers and software applications for personal and workplace use. Upon completion, students should be able to demonstrate basic personal computer skills.

CIS 147 Operating System – Windows™ 2-2-3

This course introduces operating systems concepts for a Windows operating system. Topics include hardware management, file and memory management, system configuration/ optimization, and utilities. Upon completion, students should be able to perform operating system functions at the support level in a Windows environment.

CSC 134 C++ Programming 2-3-3

This course introduces object-oriented computer programming using the C++ programming language. Topics include input/output operations, iteration, arithmetic operations, arrays, pointers, filters, and other related topics. Upon completion, students should be able to design, code, test, and debug C++ language programs. *This course has been approved to satisfy the comprehensive articulation agreement pre-major and/or elective course requirement.*

ELC 131 DC/AC Circuit Analysis 4-3-5

Corequisites: MAT 121

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 software, 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.

ELN 131 Electronic Devices 3-3-4

Prerequisites: ELC 112, ELC 131 or ELC 140

This course includes semiconductor-based devices such as diodes, bipolar transistors, FETs, thermistors, and related components. Emphasis is placed on analysis, selection, biasing, and applications in power supplies, small signal amplifiers, and switching and control circuits. Upon completion, students should be able to construct, analyze, verify, and troubleshoot discrete component circuits using appropriate techniques and test equipment.

ELN 133 Digital Electronics 3-3-4

This course covers combinational and sequential logic circuits. Topics include number systems, Boolean algebra, logic families, MSI and LSI circuits, AC/DC converters, and other related topics. Upon completion, students should be able to construct, analyze, verify, and troubleshoot digital circuits using appropriate techniques and test equipment.

ELN 232 Intro to Microprocessors 3-3-4

Prerequisites: ELN 133

This course introduces microprocessor architecture and microcomputer systems including memory and input/output interfacing. Topics include assembly language programming, bus architecture, bus cycle types, 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.

ELN 233 Microprocessor Systems 3-3-4

Prerequisites: ELN 232

This course covers the application and design of microprocessor control systems. Topics include control and interfacing of systems using AD/DA, serial/parallel I/O, communication protocols, and other related applications. Upon completion, students should be able to design, construct, program, verify, analyze, and troubleshoot fundamental microprocessor interface and control circuits using related equipment.

ELN 275 Troubleshooting 1-2-2

Prerequisites: ELN 133 and either ELN 132 or ELN 140

This course covers techniques of analyzing and repairing failures in electronic equipment. Topics include safety, signal tracing, use of service manuals, and specific troubleshooting methods for analog, digital, and other electronics-based circuits and systems. Upon completion, students should be able to logically diagnose and isolate faults and perform necessary repairs to meet manufacturers' specifications.

ENG 111 Expository Writing 3-0-3

Prerequisites: 80 CPT reading score and 86 CPT writing score, or 18 ACT score, or 450 verbal SAT score, or satisfactory completion of developmental requirements.

Corequisites: ENG 111A

This course is the required first course in a series of two designed to develop the ability to produce clear expository prose. Emphasis is placed on the writing process including audience analysis, topic selection, thesis support and development, editing, and revision. Upon completion, students should be able to produce unified, coherent, well-developed essays using standard written English. *This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in English composition.*

ENG 111A Expository Writing Lab 0-2-1

Prerequisites: 80 CPT reading and 86 CPT writing score, or 18 ACT score, or 450 verbal SAT score, or satisfactory completion of developmental requirements.

Corequisites: ENG 111

This writing laboratory is designed to apply the skills introduced in ENG 111. Emphasis is placed on the editing and revision components of the writing process. Upon completion, students should be able to apply those skills in the production of final drafts in ENG 111. *The computer is used as a writing and design tool for this course.*

ENG 114 Prof. Research & Reporting 3-0-3

Prerequisites: ENG 111

This course, the second in a series of two, is designed to teach professional communication skills. Emphasis is placed on research, listening, critical reading and thinking, analysis, interpretation, and design used in oral and written presentations. Upon completion, students should be able to work individually and collaboratively to produce well-designed business and professional written and oral presentations. The computer is used as a writing and design tool for this course. *This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in English composition.*

MAT 121 Algebra/Trigonometry I 2-2-3

Prerequisites: CPT arithmetic score of 57 and algebra score of 38, or ACT score of 18, or SAT mathematics score of 450, or successful completion of developmental requirements

This course provides an integrated approach to technology and the skills required to manipulate, display, and interpret mathematical functions and formulas used in problem solving. Topics include simplification, evaluation, and solving of algebraic and radical functions; complex numbers; right triangle trigonometry; systems of equations; and the use of technology. Upon completion, students should be able to demonstrate an understanding of the use of mathematics and technology to solve problems and analyze and communicate results.

MAT 122 Algebra/Trigonometry II 2-2-3

Prerequisites: MAT 121

This course extends the concepts covered in MAT 121 to include additional topics in algebra, function analysis, and trigonometry. Topics include exponential and logarithmic functions, translation and scaling of functions, Sine Law, Cosine Law, vectors and statistics. Upon completion, students should be able to demonstrate an understanding of the use of technology to solve problems and to analyze and communicate results.

NET 110 Data Comm/Networking 2-2-3

This course introduces data communication and networking. Topics include telecommunication standards, protocols, equipment, network topologies, communication software, LANs, WANs, the Internet, and network operating systems. Upon completion, students should be able to demonstrate understanding of the fundamentals of telecommunication and networking.

PHY 131 Physics-Mechanics 3-2-4

Prerequisites: MAT 121 or MAT 161

This algebra/trigonometry-based course introduces fundamental physical concepts as applied to engineering technology fields. Topics include systems of units, problem-solving methods, graphical analysis, vectors, motion, forces, Newton's laws of motion, work, energy, power, momentum, and properties of matter. Upon completion, students should be able to apply the principles studied to applications in engineering technology fields.