Computer Engineering Technology

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 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