

# ELCT COURSES

Opposite each course title are three numbers such as 3-2-4. The first number indicates the number of regular classroom hours for the course each week; the second number indicates the number of laboratory hours per week; and the third number indicates the hours of credit awarded for the successful completion of the course. Listed in parentheses at the end of each course description is the term(s) that the course is normally offered. F=Fall, S=Spring, and M=Summer.

The college reserves the right to cancel or delete any course with insufficient enrollment.

## Courses

### ELCT 1005. Direct Current Circuits I. 2-2-3 Units.

Provides knowledge and skills to analyze, construct, and troubleshoot basic Direct Current electrical circuits that contain resistors. Topics include: electrical safety, electrical quantities, meters, Ohm's law, energy and power, series and parallel circuits, opens and shorts, and soldering techniques. (Career Course)

### ELCT 1045. Intro to Visual BASIC Progra. 2-4-4 Units.

This course provides knowledge and skills to create programs using Microsoft's Visual BASIC. Topics include BASIC Programming, debugging programs, forms, menus, OLE, standard controls, and ActiveX controls. This course satisfies the computer literacy requirement. (Career Course)  
Prerequisites: CAPS 1101 or permission of instructor.

### ELCT 1055. Digital Logic Circuits I. 2-2-3 Units.

Prerequisite/Co-requisite:ELCT 1005.Provides knowledge and skills to analyze and troubleshoot digital logic circuits. Topics include: number systems, logic gates, Boolean expressions, combinational logic, Karnaugh maps, programmable logic devices, adders, logic families. (Career Course)  
Prerequisites: ELCT 1005.

### ELCT 1065. Alternating Current Circuits I. 2-2-3 Units.

Provides knowledge and skills to analyze, construct, and troubleshoot basic Alternating Current electrical circuits that contain resistors, inductors and capacitors. Topics include: Basic electromagnetism, AC waveforms, frequency and period, amplitude, AC measurements, oscilloscope, purely resistive AC circuits, inductance, capacitance, time constraints, reactance, impedance, basic transformer action, and three-phase supplies. (Career Course)  
Prerequisites: ELCT 1005.

### ELCT 1085. Semiconductor Devices and Circuits I. 2-2-3 Units.

Provides knowledge and skills to analyze, construct, and troubleshoot simple semiconductor circuits. Topics include: PN junction diodes, clippers and clampers, zener voltage regulator, LED, photo diodes, varactors, power supplies, rectifier types, the bipolar junction transistor, and field effect transistors. (Career Course)  
Prerequisites: ELCT 1005.  
Corequisites: ELCT 1065.

### ELCT 1100. PC Maint & Troubleshooting. 2-2-3 Units.

This course provides basic knowledge and skills for the student to perform maintenance and upgrades to microcomputer systems. Topics include microcomputer components, hardware and software maintenance procedures, MS-DOS and up-grading common computer components. This course satisfies the computer literacy requirement.(F)  
Prerequisites: BUSA 2201 or CMPS 1130.

### ELCT 2005. Direct Current Circuits II. 2-2-3 Units.

Provides knowledge and skills to analyze, construct, and troubleshoot more complex DC electrical circuits that contain resistors, capacitors, and inductors. Topics include: series-parallel circuits, source transformations, basic cell and battery construction and operation, resistive network theorems, Wye-Delta conversions, maximum power transfer theorem, and exponential rise and decay in RC and RL circuits. (Career Course)  
Prerequisites: ELCT 1005.

### ELCT 2015. Electrical Circuit Analysis. 3-3-4 Units.

This course introduces electric circuit variables and measurements, circuit elements, resistive circuits, methods of analysis of resistive circuits, circuit theorems, energy storage elements, transient response of simple RL and RC circuits, sinusoidal steady-state analysis, AC steady-state power and the use of circuit simulation software.  
Prerequisites: PHYS 2212K, MATH 2254.

### ELCT 2025. Intro to Microprocessors. 2-2-3 Units.

Provides basic knowledge of microprocessor circuits and their relation to computer programs. Topics include: CPU, arithmetic operations, logic operations, RAM, ROM, I/O, system buses, control signals, timing signals, and typical faults. (Career Course)  
Prerequisites: ELCT 1055 or permission of instructor.

### ELCT 2035. Elec Troubleshooting Technique. 2-2-3 Units.

Provides knowledge and skills to methodically troubleshoot electrical/electronic systems. Topics include: review of basic electrical concepts relating to all electrical and electronic components, industrial control devices circuits, transformers, motors, troubleshooting methodology and skills, and maintenance. (Career Course)  
Prerequisites: ELCT 1055.

### ELCT 2040. Programmable Logic Controllers. 2-2-3 Units.

Provides knowledge and skills to analyze, construct, program, and troubleshoot computer-based programmable logic controllers used in industrial processes. Topics include: programmable controllers, input/output, processing and programming, field wiring, start-up, timers, counters, sequencers, analog and digital I/O, PID, Human Machine Interface (HMI) software and troubleshooting. (Career Course)  
Prerequisites: ELCT 1055.

### ELCT 2045. Digital Logic Circuits II. 2-2-3 Units.

Provides knowledge and skills to analyze and troubleshoot sequential and complex digital logic circuits. Topics include: flip-flop, latches, registers, counters, multiplexers, decoders, ALU, and trouble shooting. (Career Course)  
Prerequisites: ELCT 1055.

### ELCT 2065. Alternating Current Circuits II. 2-2-3 Units.

Provides knowledge and skills to analyze, construct, and troubleshoot more complex AC electrical circuits. Topics include: complex number representation of phasors, series, and parallel RL and RC circuits, network analysis for AC circuits, RLC circuits, resonance and passive filters. (Career Course)  
Prerequisites: ELCT 1065.

### ELCT 2075. Motors, Drives, and Controls. 2-2-3 Units.

Provides knowledge and skills to analyze, install, and troubleshoot AC/DC motor drives. Topics include: electronic motor drives, single-phase AC motors, three-phase AC motors, Inverters, branch circuit protection, and overload protection, maintenance and troubleshooting procedures. (Career Course)  
Prerequisites: ELCT 1055 and ELCT 1085.

**ELCT 2085. Semiconductor Devices and Circuits II. 1-2-2 Units.**

Provides knowledge and skills to analyze, construct, and troubleshoot more complex semiconductor circuits. Topics include: BJT amplifier analysis, FET amplifiers, Operational amplifier characteristics and applications, oscillators, and thyristors. (Career Course)  
Prerequisites: ELCT 1085.

**ELCT 2090. Instrument and Control Systems. 1-2-2 Units.**

Provides knowledge and skills to analyze, construct, program, and troubleshoot instrumentation and control systems used in industrial processes. Topics include: sensors, controllers, PLC's, construction, application, calibration, installation and removal of equipment, process control operation (PID loops, single and cascade), input/output, processing and programming, and Human Machine Interface (HMI) software. (Career Course)  
Prerequisites: ELCT 1055 and ELCT 1085.

**ELCT 2115. Robotics. 1-2-2 Units.**

Explores basic robotic concepts. Studies in typical application environments. Topics include: robot history and fundamentals, robot classification, power sources, robot application in the workplace, robot control techniques, path control, end of arm tooling robot operation and robot controllers, controller architecture in a system, robotic language programming, and human interface issues. Use of the robots on the Computer Integrated Manufacturing Systems (CIMS) will provide the laboratory requirements. (Career Course)  
Prerequisites: ELCT 2090.

**ELCT 2116. Computer Integr Manuf (CIMS). 1-2-2 Units.**

Introduces the concepts, terminology, and programming of Computer Integrated Manufacturing (CIMS). Allows students to work in instructor-supervised teams, assembling and operating an automated production system. Reviews system electrical, electronic and mechanical principles and equipment as it applies to a flexible manufacturing system, in this case the Computer Integrated Manufacturing System (CIMS). (Career Course)  
Prerequisites: ELCT 2040.  
Corequisites: ELCT 2115.

**ELCT 2120. A+ Certification Review. 3-0-3 Units.**

Provides a review and summary of knowledge from previous courses, enhances understanding of operating systems, and helps the student prepare for the A+ Certification Exam.(S)  
Prerequisites: ELCT 1100.

**ELCT 2125. Telecommunications Principles. 2-2-3 Units.**

Provides an overview of current telecommunications technologies. Topics include: telecommunications history, system features, modulation techniques, multiplexing techniques, transmission media, telephone network, wireless communication, data communication protocols, LANs, WANs, ISDN, ATM, networking technologies. (Career Course)  
Prerequisites: ELCT 2065 and ELCT 2085.