ELECTRONICS (ELEC)

ELEC 10 Introduction to Mechatronics
2 Units (Degree Applicable)
Lecture: 18   Lab: 54

A combination of conventional electronic technology with mechanical and computer technology. Special emphasis is on robotics. Hands-on activities include the building of a robot.

ELEC 11 Technical Applications in Microcomputers
3 Units (Degree Applicable, CSU)
Lecture: 36   Lab: 54

Personal computer (PC) applications used in electronics technology. Includes word processing, spreadsheets, database, computer presentation methods, and internet research specifically designed for electronics technology.

ELEC 12 Computer Simulation and Troubleshooting
2 Units (Degree Applicable)
Lecture: 18   Lab: 54
Advisory: *ELEC 51 and ELEC 56*

Troubleshooting of electronic hardware, including use of computer-based tools for simulation and troubleshooting of analog and digital circuits. National Instruments Multisim software will be used for circuit analysis, value substitution, and fault diagnostics.

ELEC 50A Electronic Circuits - Direct Current (DC)
4 Units (Degree Applicable, CSU)
Lecture: 54   Lab: 54
Advisory: *Eligibility for MATH 51*

Direct Current (DC) electrical circuits and their applications. Covers DC sources, analysis, test equipment, measurements, and troubleshooting of resistive devices and other basic components. Includes Ohm's Law, Kirchhoff's law, and network theorems. (Students seeking a survey course in electronics should take ELEC 10, Introduction to Mechatronics, rather than ELEC 50A or 50B.)

ELEC 50B Electronic Circuits (AC)
4 Units (Degree Applicable, CSU)
Lecture: 54   Lab: 54
Advisory: *ELEC 50A*

Alternating Current (AC) electrical circuits and their applications. Covers AC sources, analysis (using complex numbers), test equipment, measurements, and troubleshooting of basic circuits with capacitors, inductors, and resistors. Includes impedance, resonance, filters, and decibels.

ELEC 51 Semiconductor Devices and Circuits
4 Units (Degree Applicable, CSU)
Lecture: 54   Lab: 54
Advisory: *ELEC 50B*

Solid-state devices and circuits, including bipolar-junction and field-effect transistors, rectifier diodes, operational amplifiers, and thyristors. Analog circuits studied include discrete and integrated circuit amplifiers, voltage regulators, oscillators and timers. Emphasizes configurations, classes, load lines, characteristic curves, gain, troubleshooting, measurements, and frequency response.

ELEC 53 Communications Systems
4 Units (Degree Applicable)
Lecture: 54   Lab: 54
Advisory: *ELEC 51 taken prior or concurrently*

Analog and digital communications systems. Emphasizes analog and digital modulation principles, multiplexing, protocols, and telecommunications circuits and systems.

ELEC 54A Industrial Electronics
4 Units (Degree Applicable, CSU)
Lecture: 54   Lab: 54
Advisory: *ELEC 50A and ELEC 50B*

Industrial electronic components and basic control circuits. Includes time delay controls, thyristor controls, relays, optoelectronic (opto) devices, direct current (DC) and alternating current (AC) motor control, transducers, silicon controlled rectifier (SCR) and unijunction transistor (UJT) devices.

ELEC 54B Industrial Electronic Systems
3 Units (Degree Applicable, CSU)
Lecture: 36   Lab: 54

Systems application of industrial electronics including industrial production and processes, automation, and programmable and motor controllers. Emphasis is on programmable logic controllers (PLCs).

ELEC 55 Microwave Communications
4 Units (Degree Applicable)
Lecture: 54   Lab: 54
Advisory: *ELEC 50B taken prior*

Microwave components and circuits. Stresses transmission lines, Smith Charts, impedance matching, antenna characteristics, wave propagation, frequency analysis, and measurement techniques.

ELEC 56 Digital Electronics
4 Units (Degree Applicable, CSU)
Lecture: 54   Lab: 54

Combinational and sequential logic circuits emphasizing number systems, binary math, basic gates, Boolean algebra, Karnaugh maps, flip-flops, counters, and registers. Stresses design and troubleshooting techniques.

ELEC 61 Electronic Assembly and Fabrication
3 Units (Degree Applicable, CSU)
Lecture: 36   Lab: 54
Advisory: *ELEC 50A and ELEC 50B*

Manufacturing and fabrication processes associated with the electronics industry. Printed circuit board (PCB) design from conception to completion. Emphasizes electrical schematics, bill of material (BOM), component selection, layout design, manufacturability, assembly, soldering, de-soldering, and surface-mount technology.

ELEC 62 Advanced Surface Mount Assembly and Rework
2 Units (Degree Applicable)
Lecture: 18   Lab: 54
Advisory: *ELEC 61*

Advanced course in assembly and repair (soldering) on surface mount assemblies (SMT). Material is similar in content to the Institute for Printed Circuits (IPC) surface mount assembly and rework certification.

ELEC 74 Microcontroller Systems
4 Units (Degree Applicable, CSU)
Lecture: 54   Lab: 54
Advisory: *ELEC 56*

Microcontroller systems and programming methods; programmable logic devices (PLDs); serial communications; conversion of signals from analog to digital formats and the converse. Industry applications, interfacing, and troubleshooting.

ELEC 76 FCC General Radiotelephone Operator License Preparation
2 Units (Degree Applicable)
Lecture: 18   Lab: 54
Advisory: *ELEC 50B*

Prepares qualified electronics and aviation technicians for the Federal Communications Commission (FCC) commercial General Radiotelephone Operator License (GROL).

ELEC 81 Laboratory Studies in Electronics Technology
1-2 Units (Degree Applicable)
Lab: 54-108

Extended laboratory experience supplementary to that available in the regular program. Allows the student to pursue more advanced and complex laboratory projects and experiments.

ELEC 91 Work Experience in Electronics
1-4 Units (Degree Applicable)
(May be taken for Pass/No Pass only)
Prerequisite: *Compliance with Work Experience regulations as designated in the College Catalog*

Provides on-the-job experience in electronics at an approved work site which is related to classroom instruction. A minimum of five hours per week of supervised work (60 non-paid clock hours or 75 paid clock hours per semester) is required for each one unit of credit.