# ELECTRONICS (ELECTR) COURSES

**ELECTR 098 1-4 Units**
**Electronics Work Experience**
**WRKEX:** 300 contact hours
Supervised training, in the form of on the job employment that will enhance the student's knowledge in the selected field of study. The student's major and job must match. For paid work, 75 hours = 1 unit; for volunteer work, 60 hours = 1 unit. Students may earn a total of 16 units toward graduation in Work Experience 098 courses. See department for specific guidelines.
**Associate Degree Applicable**

**ELECTR 110 3 Units**
**Direct Current Circuit Analysis**
**Lecture:** 54 contact hours
**Corequisite:** ELECTR 111
This is a comprehensive course in direct current circuit analysis including Ohm's law, series and parallel circuit analysis, voltage and current dividers, DC meters, Kirchhoff's laws, magnetic circuits, and network theorems.
**Associate Degree Applicable**
**Transfers to both UC/CSU**

**ELECTR 111 1 Unit**
**Direct Current Circuit Laboratory**
**Lab:** 54 contact hours
**Corequisite:** ELECTR 110
This course is the laboratory complement to ELECTR 110 including experiments reinforcing the theory of electricity and the necessary technical skills.
**Associate Degree Applicable**
**Transfers to both UC/CSU**

**ELECTR 115 3 Units**
**Alternating Current Circuit Analysis**
**Lecture:** 54 contact hours
**Prerequisite:** ELECTR 110 and ELECTR 111
**Corequisite:** ELECTR 116
This course is an in-depth analysis of alternating current circuits to include AC generation and transformation, inductance and inductive circuits, capacitance and capacitive circuits, time constants, rectangular and polar notation, AC circuit analysis, resonance, and filters.
**Associate Degree Applicable**
**Transfers to both UC/CSU**

**ELECTR 116 1 Unit**
**Alternating Current Circuit Laboratory**
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 110 and ELECTR 111
**Corequisite:** ELECTR 115
This course is the laboratory complement to ELECTR 115 including skill training in reading and interpreting measurements on an oscilloscope, using QT boards, function generators, and other test equipment.
**Associate Degree Applicable**
**Transfers to both UC/CSU**

**ELECTR 155 3 Units**
**Electronic Drawing and Assembly**
**Lecture:** 36 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 110
This course covers electronic schematic capture, simulation, export to printed circuit board design, layout, and auto-routing software. It includes basic Computer Aided Design (CAD) drafting, block diagrams, library component templates, and printed circuit board (PCB) design, fabrication, and assembly, using with through-hole and surface-mount technology and devices (SMT and SMD).
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 220C 3 Units**
**F.C.C. Rules and Regulations**
**Lecture:** 54 contact hours
This course is a review of the requirements and questions for the General Radiotelephone Operator's License offered by the Federal Communications Commission.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 230 3 Units**
**Semiconductor Devices**
**Lecture:** 54 contact hours
**Prerequisite:** ELECTR 110
This course is a study of semiconductor devices including the chemistry and physics of the structure of the atom and the operation of semiconductor devices based on energy level analysis.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 235 4 Units**
**Solid State Circuit Analysis**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 230
This course covers an analysis of discrete solid-state circuits and their design including diodes, circuit configurations, amplifiers and amplification, biasing techniques, feedback principles, FETs, photo devices, and evaluation of designed circuits.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 250C 4 Units**
**Radio Transmitters, Receivers and Antennas**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 115 and ELECTR 116
In this course, students explore topics of electronic communications, such as the electromagnetic frequency spectrum, frequency bands, analog and digital modulation, digital data, antennas, transmission lines and loads, government services and fiber optics. Exercises include diagramming modern transmitter and receiver components, plotting impedances, and making line and load conversions.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 255C 4 Units**
**Telephone and Data Networking**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 115 and ELECTR 116
This course includes telephone topology with emphasis on the Open System Interconnection (OSI) model, telephony color code, tools, patch panels, phone wiring and installation, voice and data block wiring, installation, and programming/ troubleshooting a digital key system and network.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 257C 4 Units**
**Navigation and Communication Systems**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 250C
This course covers the bench test, installation and ramp test of transmitter and receiver systems and their operating principles. Systems include Auto Direction Finder, Very High Frequency Omnirange, LORAN-C, Omega, INS, DME, ILS, VHF communication, HF communication, FM transceivers and transponder.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 265 4 Units**
**Digital Logic Design**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
This course covers combinational logic utilizing Boolean algebra and the binary numbering system. Topics include Karnaugh maps, truth tables, coding, switching circuits, converters, logic circuit elements, timers, digital-to-analog and analog-to-digital conversions, decoders, multiplexers, demultiplexers, and displays.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 266 4 Units**
**Microprocessor Technology With Assembly Language**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 265
This course covers the fundamental principles of microprocessors and microcontrollers. The architecture of the 8051 series microcontroller is highlighted along with its' operation and applications in embedded systems. Students make use of assembly language and C language to interface with both analog and digital circuitry. Software simulation tools and microcontroller trainer boards are used in lab exercises and a final project.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 270 4 Units**
**Linear Integrated Circuit Analysis**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 115 and ELECTR 116
This course is a review of bipolar transistor fundamentals and differential amplifiers with emphasis on inner connections and circuit designs using integrated circuit operational amplifiers, phase-lock loops, and current differentiating amplifiers. Includes breadboarding and evaluation of various types of active linear and pulse circuits involving operational amplifiers and phase-lock loops.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 280C 4 Units**
**Computer Operation and Maintenance**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
**Prerequisite:** ELECTR 266
This course provides a working knowledge of the principles and analysis techniques applicable to computer operations and maintenance. It includes the theory and experience necessary to understand and analyze computer circuitry as needed for entry-level work in the computer and electronics industry.
**Associate Degree Applicable**
**Transfers to CSU only**

**ELECTR 600 Noncredit**
**Preparation for DC Circuit Certification**
**Lecture:** 54 contact hours
This noncredit electronics technology course prepares students with the specific skills and knowledge in the field of Direct Current (DC) processes and circuits. This course prepares students to take the DC Basics Certification Exam with the Electronics Technicians Association (ETA).

**ELECTR 601 Noncredit**
**Preparation for AC Basics Certification**
**Lecture:** 54 contact hours
This noncredit electronics technology course prepares students with the specific skills and knowledge in the field of AC circuits. This course prepares students to take the AC Basics Certification Exam with the Electronics Technicians Association (ETA).

**ELECTR 602 Noncredit**
**Preparation for Analog Electronics Certification**
**Lecture:** 108 contact hours
This noncredit electronics technology course prepares students with the specific skills and knowledge in the field of analog processes and circuits. This course prepares students to take the Analog Electronics Certification Exam with Electronics Technicians Association (ETA).

**ELECTR 603 Noncredit**
**Preparation for Digital Basics Certification**
**Lecture:** 54 contact hours
This noncredit electronics technology course prepares students with the specific skills and knowledge in the field of digital processes and circuits. This course prepares students to take the Digital Basics Certification Exam with the Electronics Technicians Association (ETA).

**ELECTR 604 Noncredit**
**Preparation for Comprehensive Electronics Certification**
**Lecture:** 54 contact hours
This noncredit electronics technology course prepares students with the specific skills and knowledge in the field of comprehensive knowledge of motors, generators, control circuits, circuit protection, and power distribution. This course prepares students to take the Comprehensive Electronics Certification with the Electronics Technicians Association (ETA).

**ELECTR 620 Noncredit**
**Introduction to Computer Networking**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
This noncredit electronics technology course prepares students to take the ETA (Electronics Technicians Association International) STS-CN industry certification. The course covers wire and wireless local area network basics, Internet/VoIP services and security, hardware and software installation, and cabling distribution.

**ELECTR 621 Noncredit**
**Security, Alarm, and Surveillance Systems**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
This noncredit electronics technology course prepares students to take the ETA (Electronics Technicians Association International) STS-SS industry certification. The course covers closed-circuit television (CCTV) system, security and fire alarm system, Voice-over-Internet Protocol (VoIP), security cameras, smart locks, and smart access control.

**ELECTR 622 Noncredit**
**Smart Environmental Controls**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
This noncredit electronics technology course prepares students to take the ETA (Electronics Technicians Association International) STS-EC industry certification. The course covers smart lighting, smart thermostats, smart plugs and switches, smart HVAC, and carbon monoxide and smoke detectors, and other miscellaneous smart devices.

**ELECTR 623 Noncredit**
**Audio-Visual Entertainment Systems**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
This noncredit course prepares students to take the ETA (Electronics Technicians Association International) STS-AV industry certification. The course covers smart televisions and projectors, HD, UHD, LED, and OLED television technologies, wireless smart speakers, Wi-Fi screencasting, audio and HD cabling, amplifiers and receivers, surround sound speaker systems and connectors, rackmounts, and other accessories.